Harmony XB5R
Expert Instruction Sheet

01/2014

EIO0000000812.03

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All pertinent state, regional, and local safety regulations must be observed when installing and using this product. For reasons of safety and to help ensure compliance with documented system data, only the manufacturer should perform repairs to components.

When devices are used for applications with technical safety requirements, the relevant instructions must be followed.

Failure to use Schneider Electric software or approved software with our hardware products may result in injury, harm, or improper operating results.

Failure to observe this information can result in injury or equipment damage.

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Safety Information

Important Information

NOTICE

Read these instructions carefully, and look at the equipment to become familiar with the device before trying to install, operate, or maintain it. The following special messages may appear throughout this documentation or on the equipment to warn of potential hazards or to call attention to information that clarifies or simplifies a procedure.

The addition of this symbol to a Danger safety label indicates that an electrical hazard exists, which will result in personal injury if the instructions are not followed.

This is the safety alert symbol. It is used to alert you to potential personal injury hazards. Obey all safety messages that follow this symbol to avoid possible injury or death.

⚠ DANGER

DANGER indicates an imminently hazardous situation which, if not avoided, **will result in** death or serious injury.

⚠ WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **can result in** death or serious injury.

⚠ CAUTION

CAUTION indicates a potentially hazardous situation which, if not avoided, **can result in** minor or moderate injury.

NOTICE

NOTICE is used to address practices not related to physical injury.

PLEASE NOTE

Electrical equipment should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by Schneider Electric for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction and operation of electrical equipment and its installation, and has received safety training to recognize and avoid the hazards involved.

About the Book

At a Glance

Document Scope

This documentation is a reference for the Harmony XB5R wireless and batteryless pushbutton.

Validity Note

This documentation is valid for Harmony XB5R.

The technical characteristics of the devices described in this manual also appear online. To access this information online:

Step	Action
1	Go to the Schneider Electric home page *www.schneider-electric.com*.
2	In the **Search** box type the reference of a product or the name of a product range. ● Do not include blank spaces in the model number/product range. ● To get information on a grouping similar modules, use asterisks (*).
3	If you entered a reference, go to the **Product datasheets** search results and click on the reference that interests you. If you entered the name of a product range, go to the **Product Ranges** search results and click on the product range that interests you.
4	If more than one reference appears in the **Products** search results, click on the reference that interests you.
5	Depending on the size of your screen, you maybe need to scroll down to see the data sheet.
6	To save or print a data sheet as a .pdf file, click **Download XXX product datasheet**.

The characteristics that are presented in this manual should be the same as those characteristics that appear online. In line with our policy of constant improvement, we may revise content over time to improve clarity and accuracy. If you see a difference between the manual and online information, use the online information as your reference.

Related Documents

Title of Documentation	Reference Number
Wireless and Batteryless Pushbutton Catalogue Module	36174
Package Instruction Sheet	S1A57199
Receivers Instruction Sheet	S1A57202
Transmitter with Metal or Plastic Head and Cap Instruction Sheet	S1A57198
Relay Antenna Instruction Sheet	S1A57194
Mobile Box Instruction Sheet	S1A57210
ATEX Transmission Devices Instruction Sheet	HRB29193
ATEX Reception Devices Instruction Sheet	HRB41321
Rope Pull Switch Instruction Sheet	S1B90581

You can download these technical publications and other technical information from our website at www.schneider-electric.com.

Product Related Information

The application of this product requires expertise in the design and programming of control systems.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

Only persons with expertise in the design and programming of control systems are allowed to program, install, alter, and apply this product.

Follow all local and national safety codes and standards.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Chapter 1
Harmony XB5R Introduction

Purpose

This chapter provides an overview of the Harmony XB5R.

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
General Presentation of Harmony XB5R	10
Presentation of Harmony XB5R Ready to Use Packages	12
Presentation of XB5R Components	14

General Presentation of Harmony XB5R

Offer Presentation

Harmony wireless and batteryless pushbuttons are used for remote control of a receiver relay using a transmitter pushbutton. Control is via radio transmission: the transmitter is equipped with a “dynamo” generator that converts the mechanical energy produced by pressing the pushbutton into electrical energy. A radio-coded message with a unique ID code is sent, in a single pulse, to one or more receiver(s) located several tens of metres away (see figure A). One receiver can also be activated by different transmitters (see figure B).

This technology cannot be used for hoisting applications (“raise/lower”, “left/right”, etc. movements) or safety applications (emergency stop buttons etc.). The Harmony XB4 and XB5 wired pushbutton range or the XAC pendant control station range have to be used for these applications.

⚠ WARNING

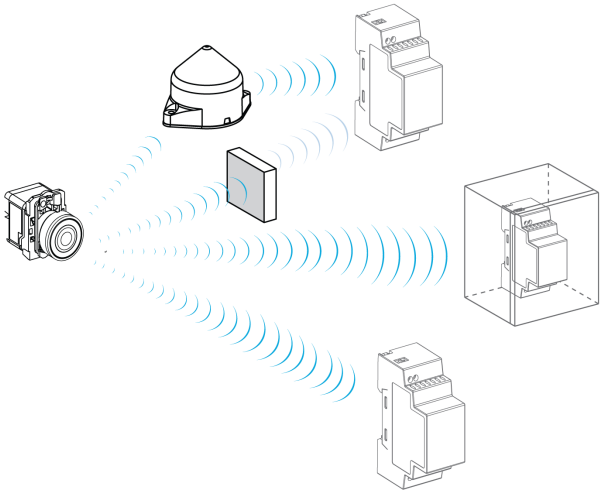
UNINTENDED EQUIPMENT OPERATION

- Do not use this equipment in safety critical machine functions.
- Use appropriate safety interlocks where personnel and/or equipment hazards exist.
- Do not disassemble, repair, or modify this equipment.
- Install and operate this equipment in an appropriately rated enclosure for its intended environment.
- Install properly rated fuses.
- Check that the control is not actived if the product falls during transit.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

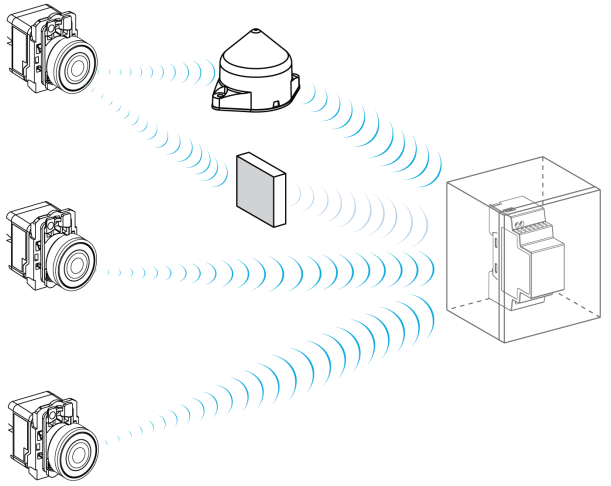
NOTE: The rated fuses are indicated in the Receiver Wiring Diagram *(see page 44)*.

Figure A: Transmission between 1 Transmitter and 3 Receivers



NOTE: One transmitter can be taught and can activate several receivers. The number of receivers is not limited.

Figure B: Transmission between 3 Transmitters and 1 Receiver



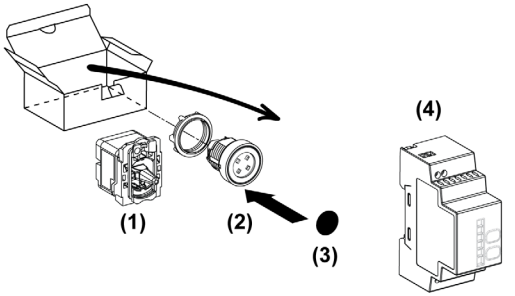
NOTE: One receiver can be activated by several transmitters. The number of transmitters is limited: 32 transmitters maximum.

Presentation of Harmony XB5R Ready to Use Packages

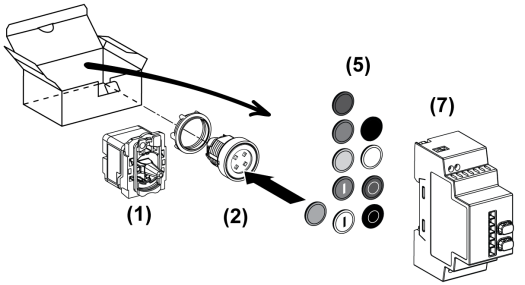
Illustration

NOTE: The following figures show for all packages, the transmitter and the receiver are already paired in Schneider factory.

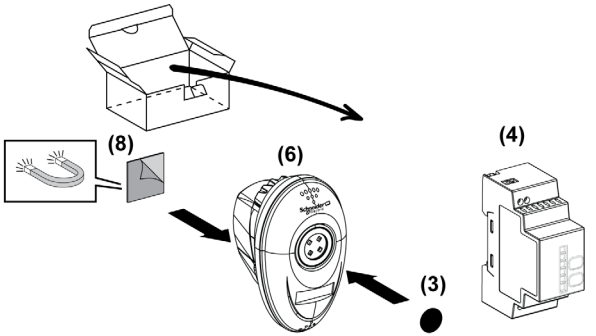
XB•RFB01



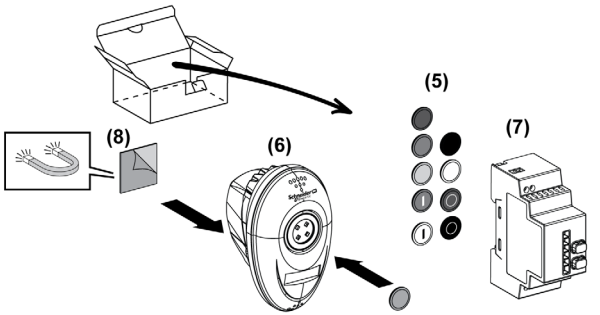
XB•RFA02



XB5RMB03



XB5RMA04



1 Transmitter
2 Head
3 Cap
4 Non-programmable receiver
5 Set of 10 caps
6 Transmitter + Head + Mobile box
7 Programmable receiver
8 Magnet (could be glued on the box if needed)

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

• Disconnect all power before servicing equipment.

• Use only the specified voltage when operating this equipment and any associated products.

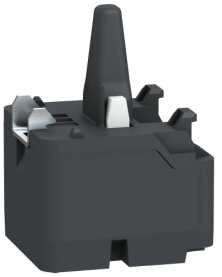
Failure to follow these instructions will result in death or serious injury.

Presentation of XB5R Components

Transmitters

ZB5RZA0

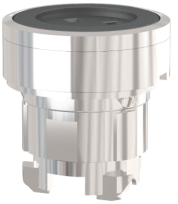
ZB5RZC2



ZBRT1

ZBRT2

ZB5RTA4



ZB4RZA0

ZBRP1

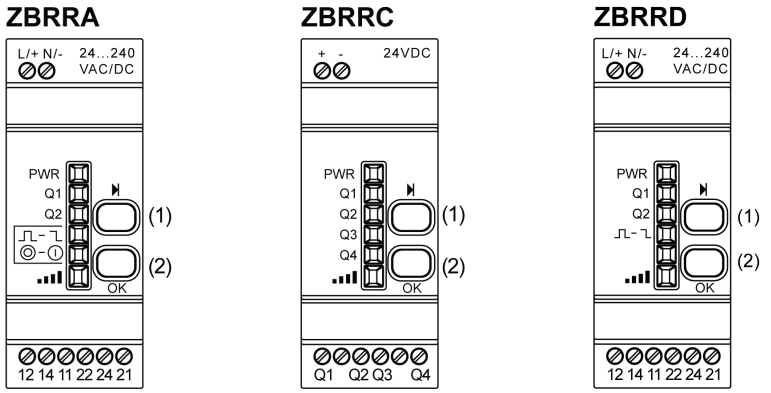
The following table describes the transmitter characteristics.

Designation	Pushbutton Type	Cap Color	Reference	Mass
Transmitter Only (1 frame sent at the push of the button)	–	–	ZBRT1	0.025 kg (0.055 lb)
Transmitter Only (1 frame sent at the push of the button, 1 frame sent at the release of the button)	–	–	ZBRT2	0.025 kg (0.055 lb)
Spring return pushbutton heads for transmitter ZBRT1	Plastic	Without cap	ZB5RZA0	0.015 kg (0.033 lb)
	Metallic	Without cap	ZB4RZA0	0.030 kg (0.066 lb)

Designation	Pushbutton Type	Cap Color	Reference	Mass
Pushbuttons including: ● a ZBRT1 transmitter fitted with fixing collar ● a spring return pushbutton head with clipped-in cap	Plastic	White	ZB5RTA1	0.045 kg (0.099 lb)
		Black	ZB5RTA2	0.045 kg (0.099 lb)
		Green	ZB5RTA3	0.045 kg (0.099 lb)
		“I” white on green background	ZB5RTA331	0.045 kg (0.099 lb)
		Red	ZB5RTA4	0.045 kg (0.099 lb)
		“O” White on red background	ZB5RTA432	0.045 kg (0.099 lb)
		Yellow	ZB5RTA5	0.045 kg (0.099 lb)
		Blue	ZB5RTA6	0.045 kg (0.099 lb)
	Metallic	White	ZB4RTA1	0.085 kg (0.187 lb)
		Black	ZB4RTA2	0.085 kg (0.187 lb)
		Green	ZB4RTA3	0.085 kg (0.187 lb)
		“I” White on green background	ZB4RTA331	0.085 kg (0.187 lb)
		Red	ZB4RTA4	0.085 kg (0.187 lb)
		“O” White on red background	ZB4RTA432	0.085 kg (0.187 lb)
		Yellow	ZB4RTA5	0.085 kg (0.187 lb)
		Blue	ZB4RTA6	0.085 kg (0.187 lb)
Spring return mushroom head for ZBRT1/ZBRT2 transmitters	Plastic	Black	ZB5RZC2	0.025 kg (0.055 lb)
Pushbutton including: ● a ZBRT1 transmitter fitted with fixing collar ● a spring return mushroom head	Plastic	Black	ZB5RTC2	0.055 kg (0.121 lb)
Rope Pull Switch	Plastic	Black	ZBRP1	0.150 kg (0.331 lb)

Programmable Receivers

The following figure shows the programmable receivers.



(1): Selection button

(2): Validation button

The following table describes the characteristics of programmable receivers.

Designation	Ouputs	Receiver Voltage	Reference	Mass
Programmable Receivers with indicator light LED and teach button	4 PNP 200 mA	24 Vdc	ZBRRC	0.130 kg (0.287 lb)
	2 relays change over 3 A	24...240 Vac/Vdc	ZBRRA	0.130 kg (0.287 lb)
			ZBRRD	0.130 kg (0.287 lb)

Harmony ZB5RZA0 and ZB4RZA0 Pushbutton Caps

ZBA7235

ZBA7331

ZBA7432

The following table describes the characteristics of the caps for the ZB5RZA0 and ZB4RZA0 pushbuttons.

Cap Color	Labeling	Reference	Mass
White	-	ZBA71	0.010 kg (0.022 lb)
	“I” black	ZBA7137	0.010 kg (0.022 lb)
	“↑ ” black	ZBA7134	0.010 kg (0.022 lb)
	“+” black	ZBA7138	0.010 kg (0.022 lb)
Black	-	ZBA72	0.010 kg (0.022 lb)
	“O” white	ZBA7232	0.010 kg (0.022 lb)
	“+” white	ZBA7233	0.010 kg (0.022 lb)
	“↓” white	ZBA7235	0.010 kg (0.022 lb)
	“I” white	ZBA7237	0.010 kg (0.022 lb)

Cap Color	Labeling	Reference	Mass
Green	-	ZBA73	0.010 kg (0.022 lb)
	“I” white	ZBA7331	0.010 kg (0.022 lb)
	“+” white	ZBA7333	0.010 kg (0.022 lb)
	“↑ ” white	ZBA7335	0.010 kg (0.022 lb)
	“II” white	ZBA7336	0.010 kg (0.022 lb)
Red	-	ZBA74	0.010 kg (0.022 lb)
	“O” white	ZBA7432	0.010 kg (0.022 lb)
Yellow	-	ZBA75	0.010 kg (0.022 lb)
Blue	-	ZBA76	0.010 kg (0.022 lb)

Accessories

ZBRM01

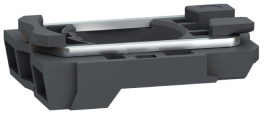
ZBRM21

ZBRM22

ZBRACS

XALD02

ZBRA1



ZB5AZ009

The following table describes the characteristics of housing and accessories for XB5R.

Designation	Description	Reference	Mass
Empty plastic handy box for mobile applications with wireless and batteryless pushbutton	1 hole	ZBRM01	0.09 kg (1.984 lb)
Empty plastic mobile box for mobile and fixed applications with wireless and batteryless pushbutton	1 hole	ZBRM21	0.109 kg (0.240 lb)
	2 holes	ZBRM22	0.110 kg (0.242 lb)
Support for ZBRM21/ZBRM22 Plastic	–	ZBRACS	0.064 kg
Empty plastic box for embedded or fixed transmitter	1 hole	XALD01	0.136 kg (0.299 lb)
	2 holes	XALD02	0.193 kg (0.425 lb)

Designation	Description	Reference	Mass
Relay-Antenna for increased distances	24...240 Vac/Vdc - Cable (5 m/16.4 ft) - 1 Voltage LED - 2 Reception/Emission LED	ZBRA1	0.200 kg (0.440 lb)
Mounting Base	Plastic	ZB5AZ009	0.006 kg (0.013 lb)
	Metallic	ZB4BZ009	0.038 kg (0.083 lb)

Chapter 2
Installation

Purpose

This chapter provides an overview of the Harmony XB5R installation.

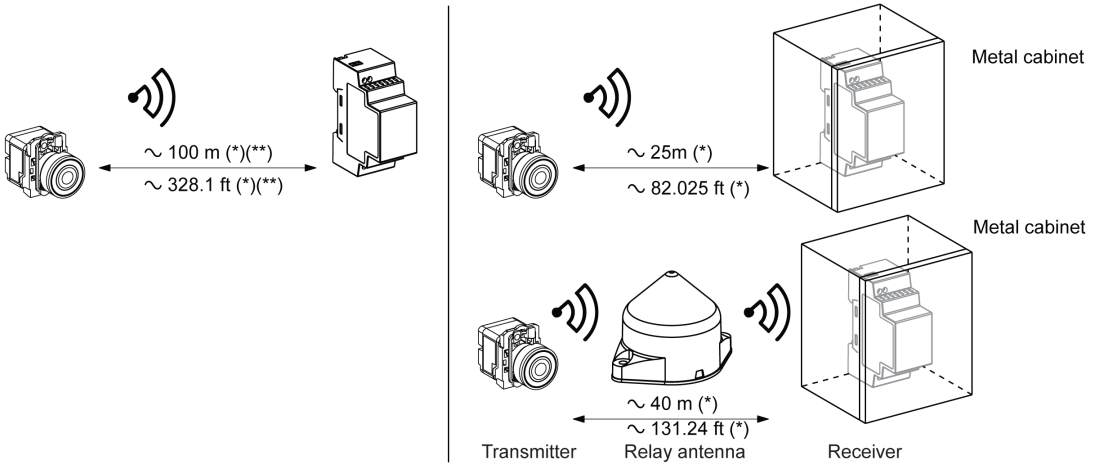
What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
General Installation Instruction for Harmony XB5R	24
Transmitter and Pushbutton Assembly	28
Transmitter and Pushbutton Disassembly	33
Mounting Data for Rope Pull Switch	35
Mounting Instructions for ZBRM01 Handy Box	36
Mounting Instructions for ZBRM21/ZBRM22 Mobile Boxes	38
Mounting instructions For ZBRACS Support	40
Receiver Assembly and Disassembly	41
Receiver Wiring Diagram	44
Relay Antenna Installation	46

General Installation Instruction for Harmony XB5R

Maximum Distances



(*) Typical values that may be modified by the application environment.

(**) Free field (unobstructed).

NOTE:

- The range may be increased by adding antenna ZBRA1.
- The range is reduced if the transmitter is placed in a metal box (reduction factor: approx 10%).
- Once wiring is complete, test the product in all possible active areas (while remaining within range).

The level of signal attenuation depends on the materials through which the signal will pass:

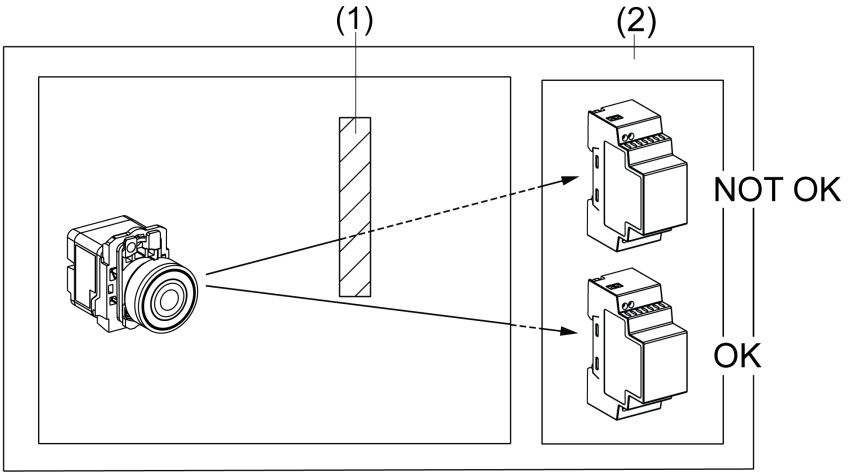
Glass window	10...20 % (*)
Plaster wall	30...45 % (*)
Brick wall	60 % (*)
Concrete wall	70...80 % (*)
Metal structure	50...100 % (*)

(*) Values for indication purposes only. Actual values depend on the thickness and nature of the material.

Installation Conditions

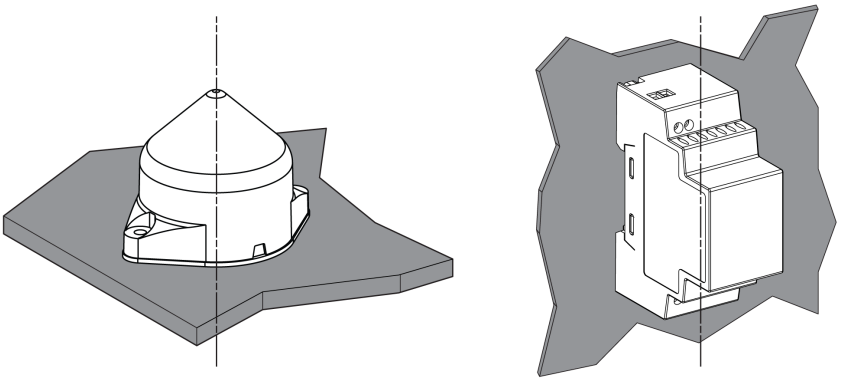
Transmitter operating temperature	-25...+70° C (-13...+158° F)
Receiver operating temperature	-25...+55° C (-13...+131° F)
Transmitter protection level	IP65/NEMA3
Receiver protection level	IP20
Transmitter shock resistance	IK03

Mounting Tips

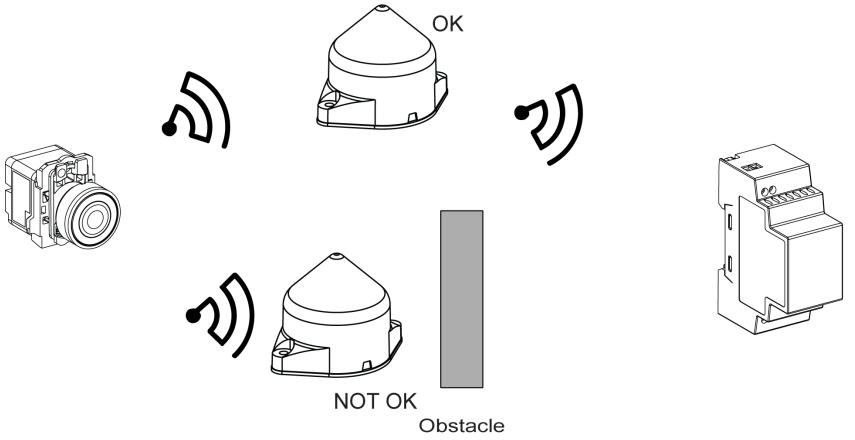


1 Metal structure
2 Wall
NOTE: To ease the radio transmission, the best is to avoid obstacles. Find the best place to install the transmitter and the receiver to have the minimum of obstacles.

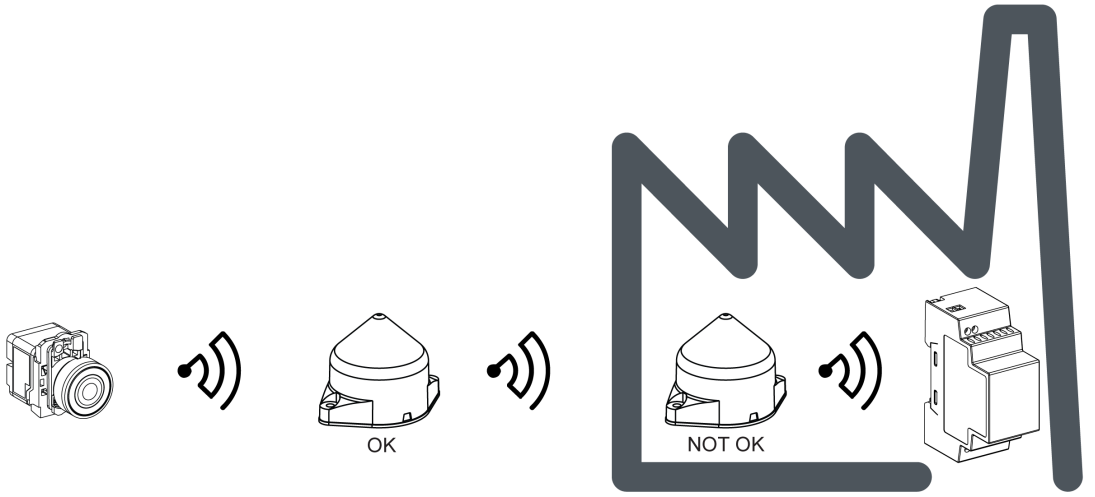
Mounting Tips for Antenna



The antenna and the receiver are installed following their vertical axis.



The antenna is used to bypass the obstacle.



NOTE: The antenna should be placed before the obstacle. The signal will be amplified before the obstacle to enable to go through it.

Transmitter and Pushbutton Assembly

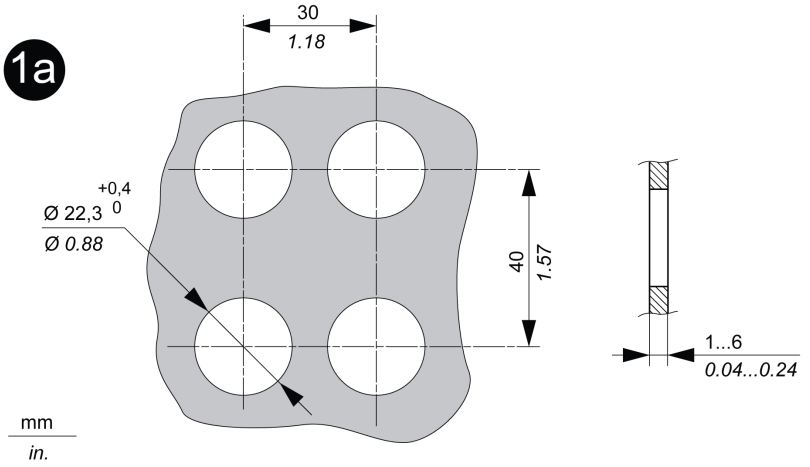
Introduction

Follow these steps to install the transmitter and pushbutton.

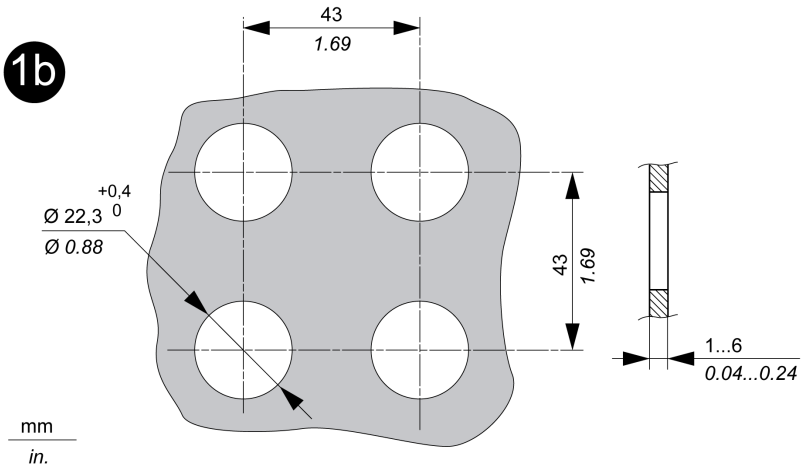
Step 1: Mounting on a panel

This figure shows the diameter of the holes for ZB5R or ZB4R pushbuttons.

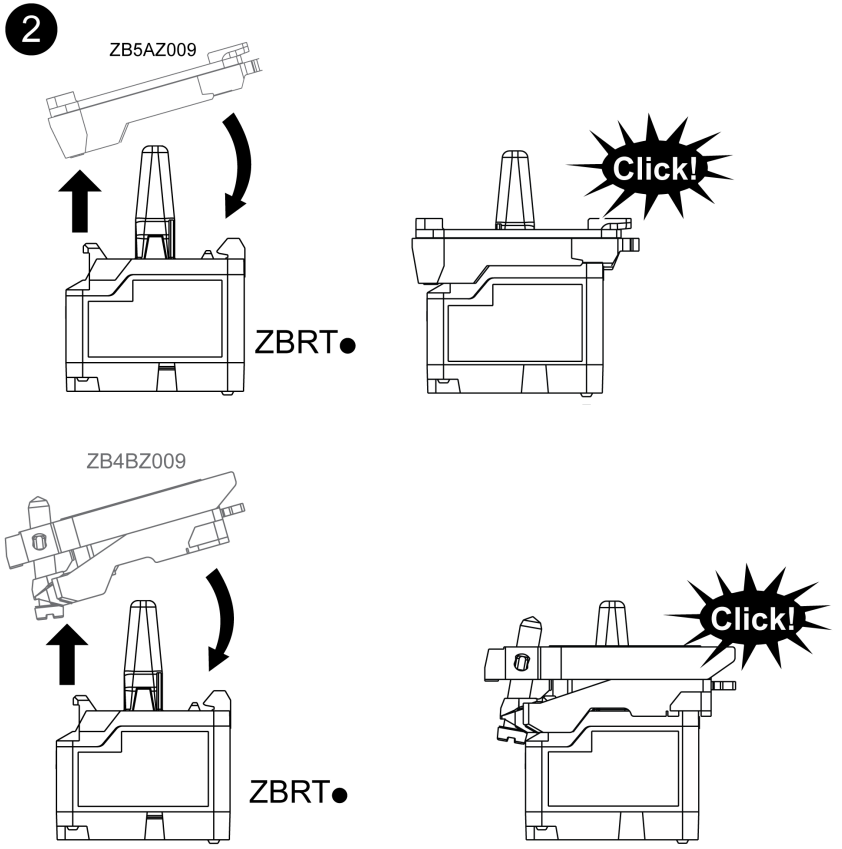
For all ZB5R••• heads except ZB5RZC2:



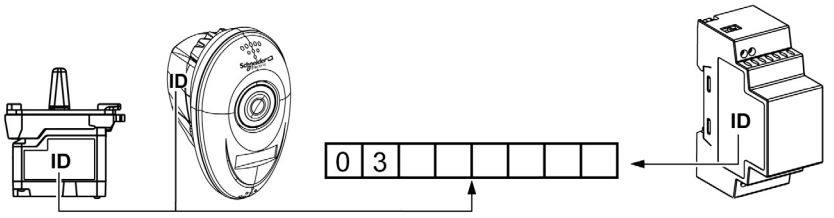
For ZB5RZC2 head:



Step 2: Attach the mounting base to the transmitter

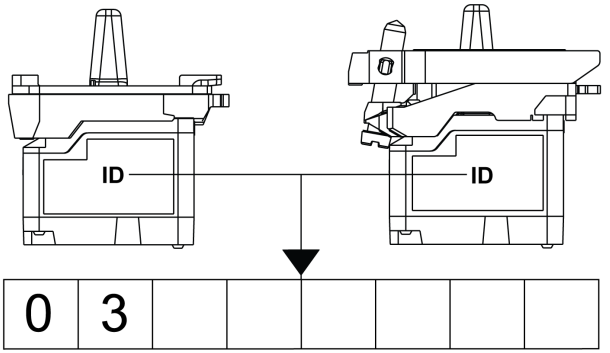


Packages: ID Registration

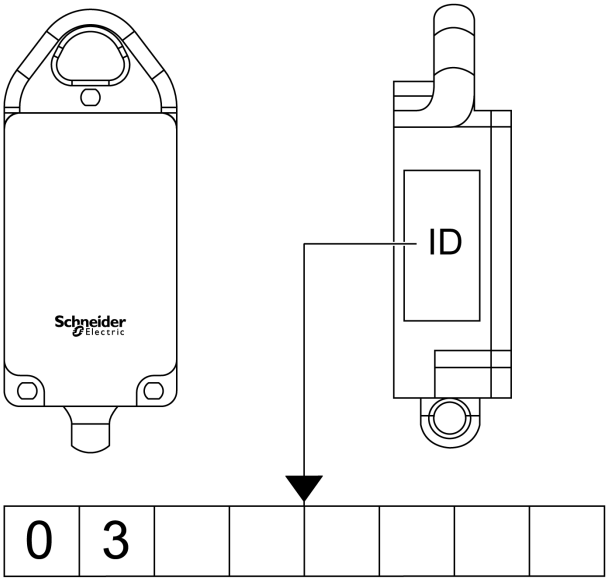


NOTE: Please note and retain your transmitter ID. You will need it for an ID reset. The ID reset is described in the Total Reset and ID Reset Procedure *(see page 71)*.

Transmitter: ID Registration

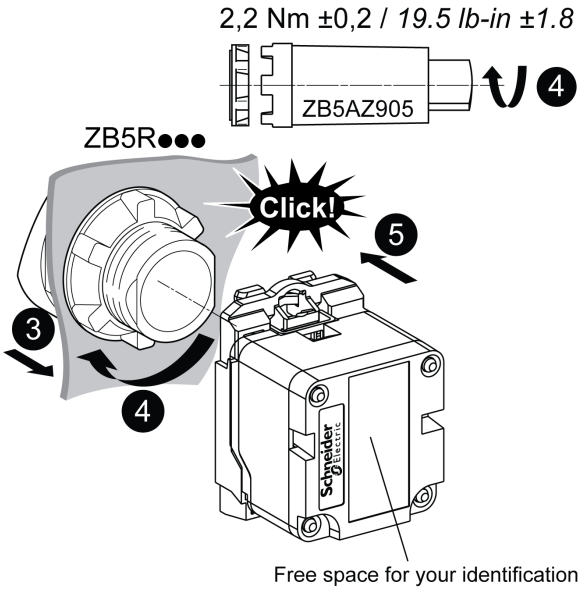


Rope Pull Switch: ID Registration



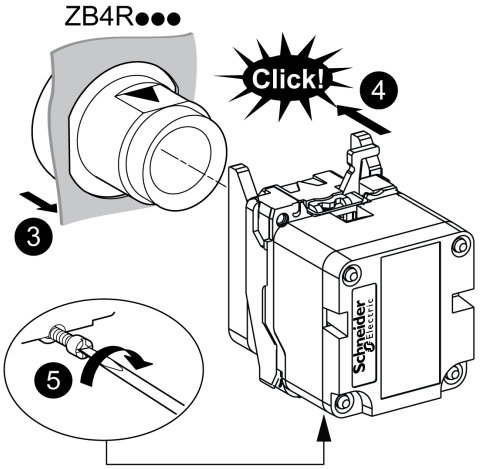
Steps 3, 4 and 5: Assembling Plastic Pushbuttons

Plastic pushbuttons are assembled as follows:

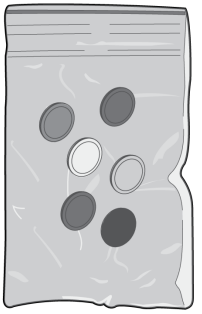


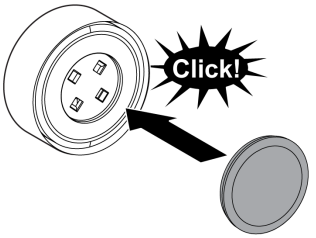
Steps 3, 4 and 5: Assembling Metallic Pushbuttons

Metallic pushbuttons are assembled as follows:



Step 6: Pushbutton Cap Assembly

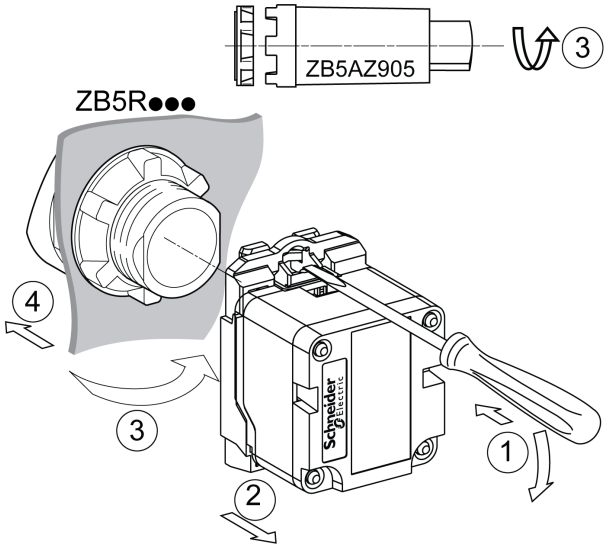




Transmitter and Pushbutton Disassembly

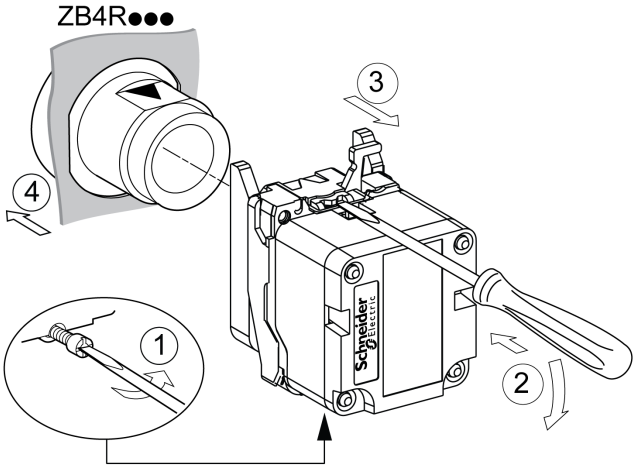
Plastic Pushbutton Disassembling

Follow the four steps shown to disassemble the transmitter and the plastic pushbutton:



Metallic Pushbutton Disassembling

Follow the three steps shown to disassemble the transmitter and the metallic pushbutton:



Models: ZBRT1, ZBRT2, ZBRTP enclosed in ZBRP1

FCC USA and I C Canada Compliance Statement

This device complies with part 15 of the FCC rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

1) This device may not cause harmful interference.
2) This device must accept any interference received, including interference that may cause undesired operation of the device.

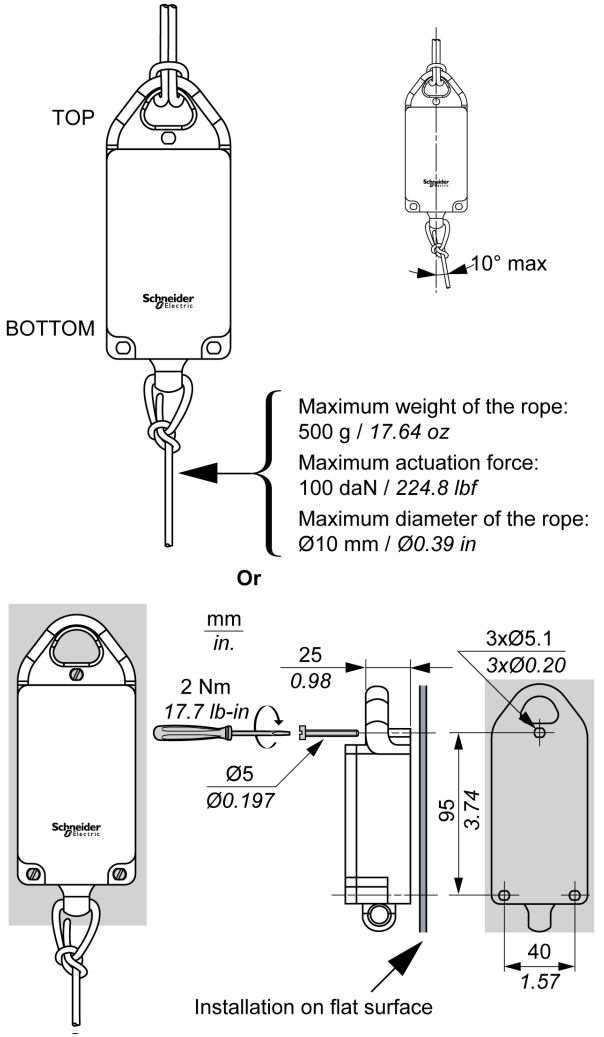
NOTE: Schneider Electric is not responsible for any radio or tv interference caused by unauthorized modifications to this equipment. Changes or modifications not expressly approved by Schneider Electric responsible for compliance could void the user's authority to operate the equipment.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1) L'appareil ne doit pas produire de brouillage.
2) L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

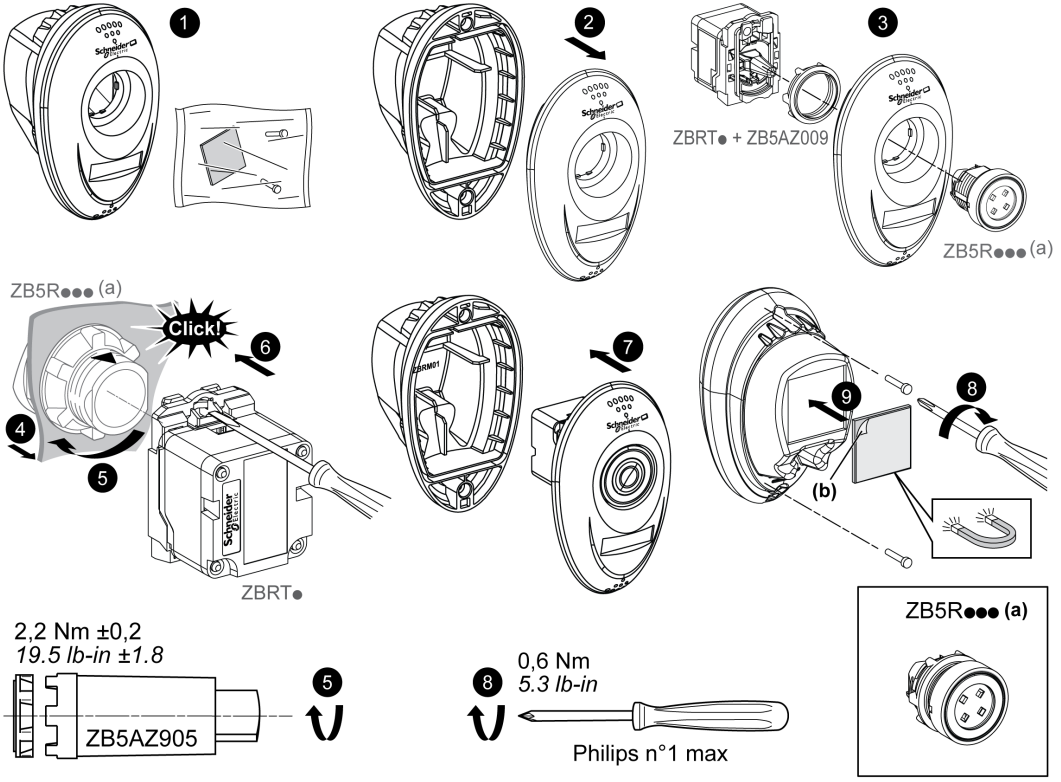
Mounting Data for Rope Pull Switch

Rope Pull Switch Assembly



Mounting Instructions for ZBRM01 Handy Box

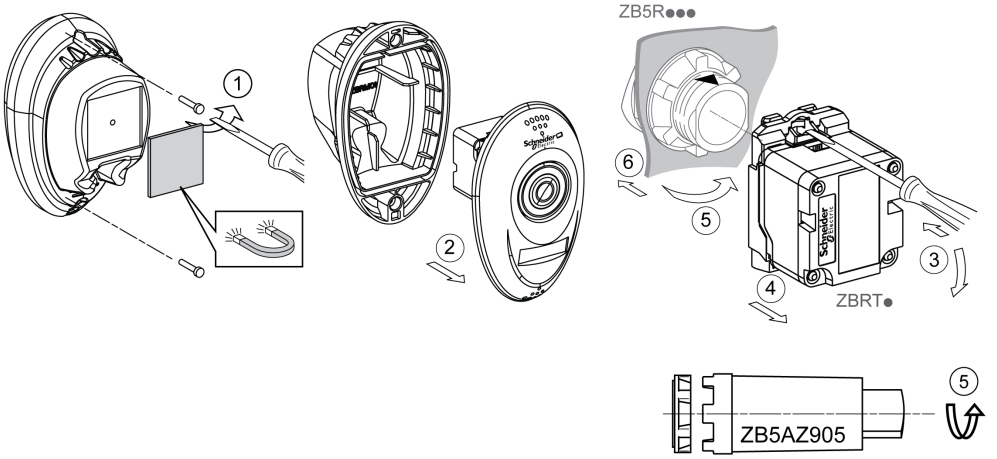
Assembly



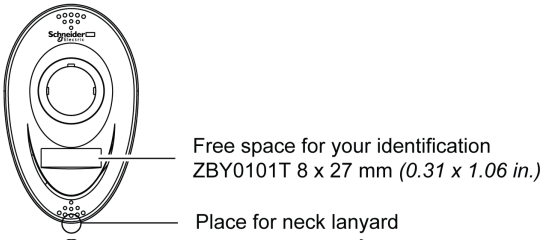
(a) Except for ZB5RZC2.

(b) Before performing step 9, remove plastic protection from each side of the magnet.

Disassembly

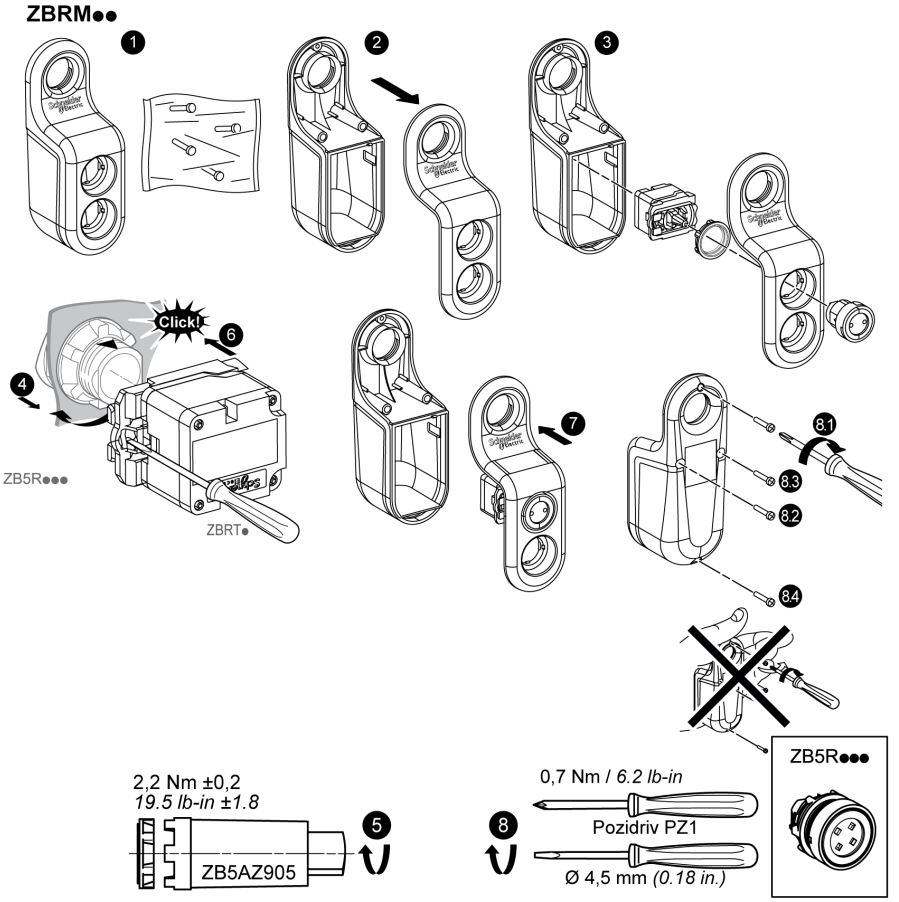


Location for Accessories



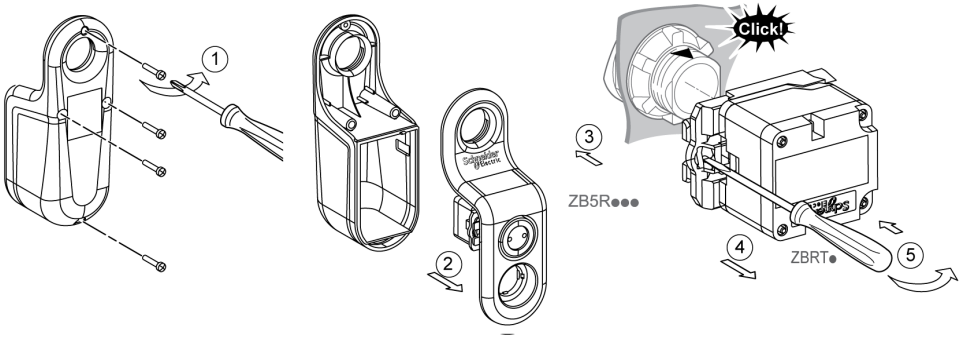
Mounting Instructions for ZBRM21/ZBRM22 Mobile Boxes

Assembly



Disassembly

ZBRM●●

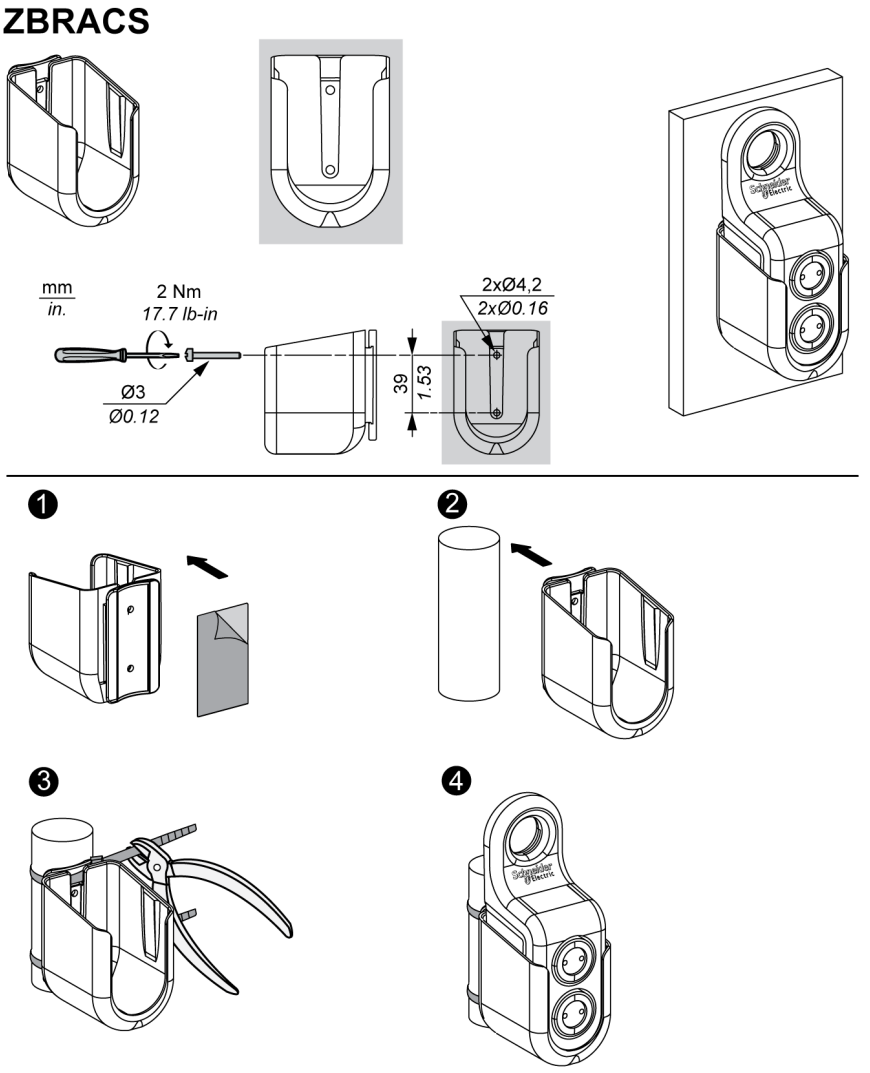


Location for Accessories

Free space for your identification
ZBY0101T 8 x 27 mm *(0.31 x 1.06 in.)*

Mounting instructions For ZBRACS Support

Assembly

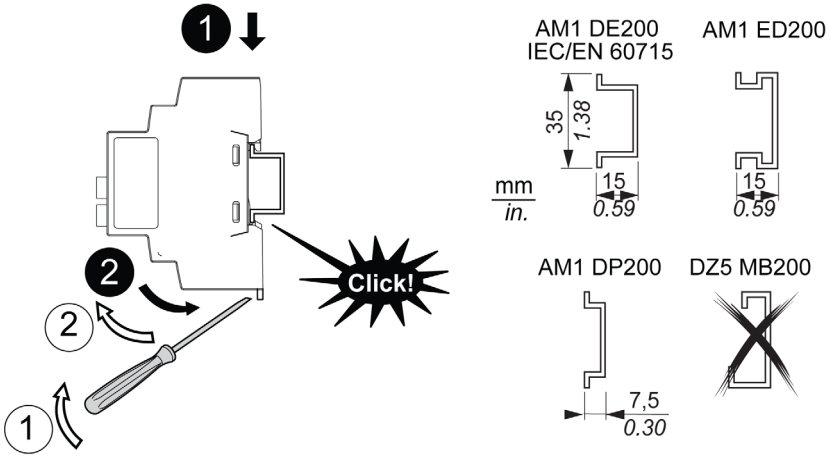


Receiver Assembly and Disassembly

Instructions

Follow the steps in black for assembly.

Follow the steps in white for disassembly.



Models: ZBRRA, ZBRRC, ZBRRD, and XB•RFB01

FCC USA and I C Canada Compliance Statement

This device complies with part 15 of the FCC rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

1) This device may not cause harmful interference.
2) This device must accept any interference received, including interference that may cause undesired operation of the device.

NOTE: Schneider Electric is not responsible for any radio or tv interference caused by unauthorized modifications to this equipment. Changes or modifications not expressly approved by Schneider Electric responsible for compliance could void the user's authority to operate the equipment.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1) L'appareil ne doit pas produire de brouillage.
2) L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

In USA, our address and contact:

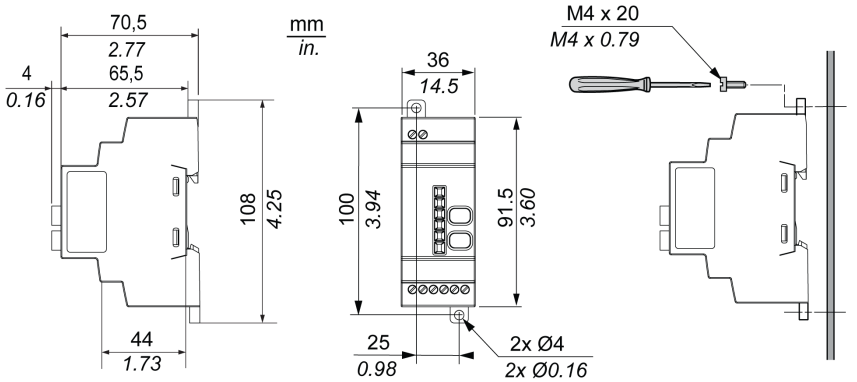
Schneider Electric

8001 Knightdale Blvd,

Knightdale, NC 27545

919-266-3671 (phone)

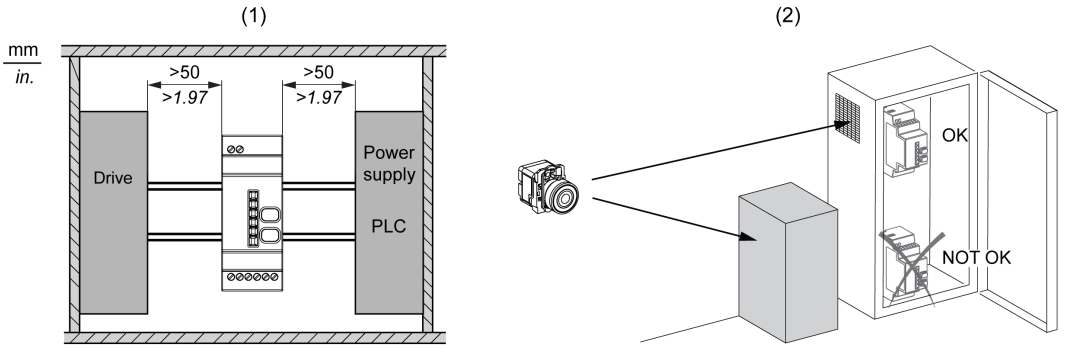
Receiver Dimensions



mm / in. 6 / 0.24				
mm^2	0,14…0,75	0,14…2,5	0,14…4	0,14…1,5
AWG	*26…18*	*26…14*	*26…12*	*26…16*

Ø 3,5 mm / *0.14 in.*		Nm	0,6
		lb-in	*5.3*

Receiver Mounting Positions



(1): To enhance the signal reception, respect the above positioning.

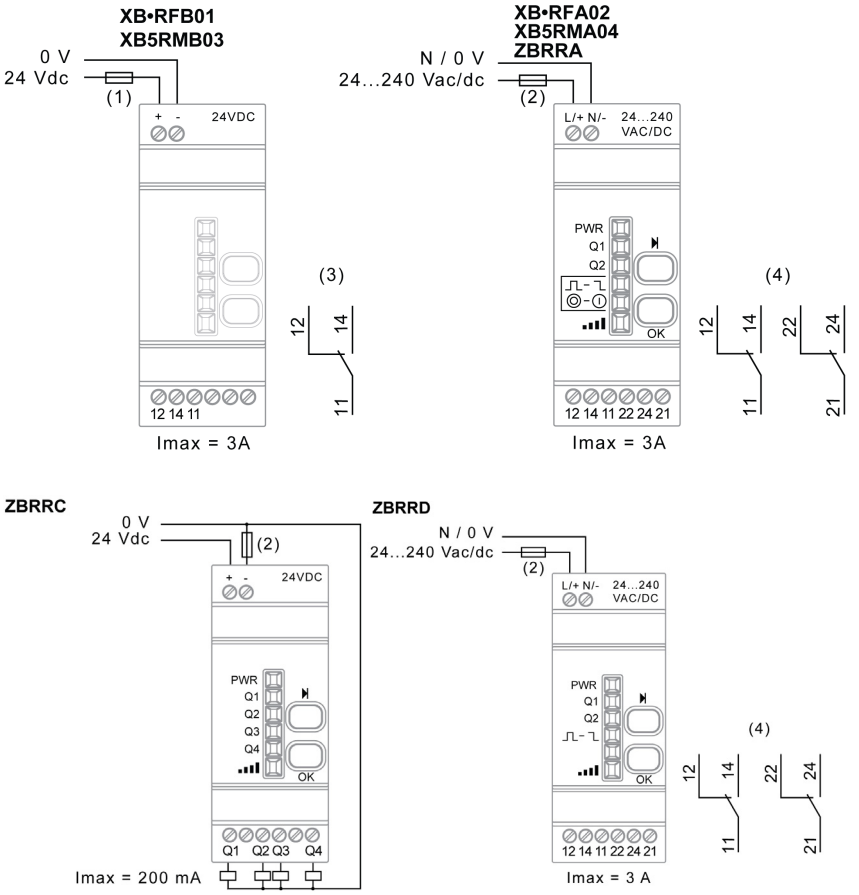
(2): In a metal cabinet, the optimum place for the receiver is on the top and/or near the holes. This position avoids obstacles and enhances reception.

NOTE: For XB•RFA02, XB5RMA04, ZBRRA, ZBRRC, ZBRRD: before disassembly for storage, perform a total reset of the receiver memory. The total reset is described in the Total Reset and ID Reset procedure *(see page 71)*.

Receiver Wiring Diagram

Wiring Diagram

The following figures show the wiring diagrams for the Harmony XB5R Receiver.



(1): 125 mA fast-blow fuse.
(2): 500 mA fuse from supplier Bussman® reference GMA-500 mA, 250 V 0.5 A fast-blow.
(3): Output contact ratings B300 Pilot Duty 3 A - 240 Vac Resistive.
(4): Output contact ratings B300 - R300 Pilot Duty 3 A - 240 Vac Resistive.

UL: Control of overvoltage to be provided after main service disconnect overcurrent device, with a UL1449 TVSS device (Transient Voltage Surge Suppressor) tested as type 2 (6kV/3kA min), with a MCOV (Maximum Continuous Operating Voltage) min rated to Phase to Phase voltage and a VPR (Voltage Protection Rating) of 1.5 kV.

⚠ DANGER

HAZARD OF ELECTRIC SHOCK, EXPLOSION OR ARC FLASH

- Disconnect all power before servicing equipment.
- Use only the specified voltage when operating this equipment and any associated products.

Failure to follow these instructions will result in death or serious injury.

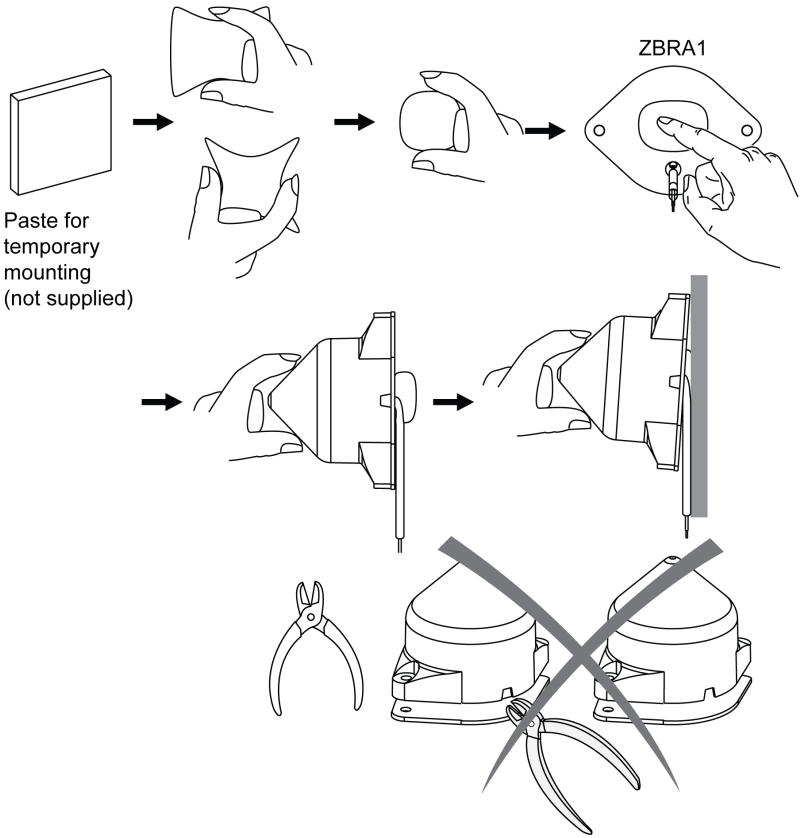
Relay Antenna Installation

Introduction

Observe the maximum distances between transmitter, antenna and receiver *(see page 24)* and the Mounting tips for antenna *(see page 26)*.

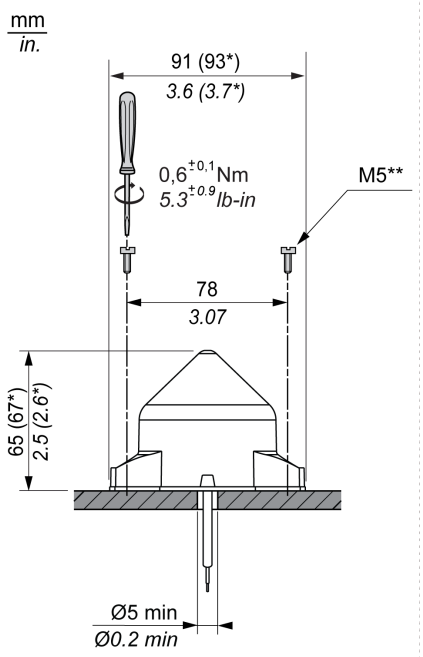
Temporary Mounting

This temporary mounting is used to search the best place for the antenna in order to enhance the radio signal.



NOTE: For temporary assembly the breakable part of the antenna must not be cut off.

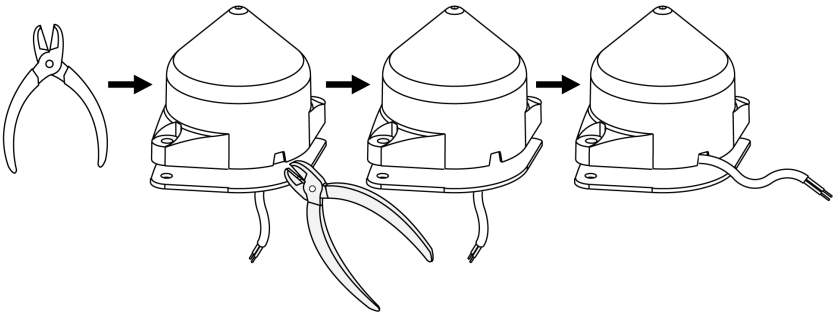
Axial Cable Route



(*): Dimensions including gasket

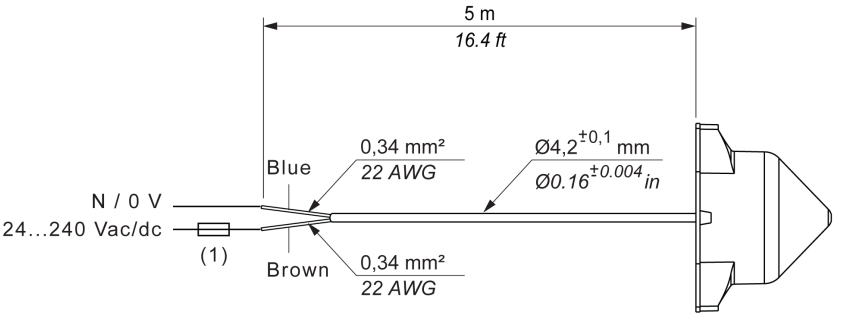
(**): Screws not supplied

Radial Cable Route



Wiring Diagram

The following figure shows the relay antenna wiring diagram for Harmony XB5R.



(1): 500 mA from supplier Bussman® reference GMA-500mA, 250 V 0.5 A fast-blow.

UL: Control of Overvoltage to be provided after main service disconnect overcurrent device, with a UL1449 TVSS device (Transient Voltage Surge Suppressor) Tested as type 2 (6 kV/3 kA min), with a MCOV (Maximum Continuous Operating Voltage) min. rated to Phase to Phase voltage and a VPR (Voltage Protection Rating) of 1.5 kV.

⚠ WARNING

UNINTENDED EQUIPMENT OPERATION

- Do not use this equipment in safety critical machine functions.
- Use appropriate safety interlocks where personnel and/or equipment hazards exist.
- Install and operate this equipment in an enclosure appropriately rated for its intended environment.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

Model: ZBRA1

FCC USA and I C Canada Compliance Statement

This device complies with part 15 of the FCC rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

1) This device may not cause harmful interference.
2) This device must accept any interference received, including interference that may cause undesired operation of the device.

NOTE: Schneider Electric is not responsible for any radio or tv interference caused by unauthorized modifications to this equipment. Changes or modifications not expressly approved by Schneider Electric responsible for compliance could void the user's authority to operate the equipment.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1) L'appareil ne doit pas produire de brouillage.
2) L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Chapter 3
Preparing For Use

Purpose

This chapter explains how to prepare the Harmony XB5R for use.

What Is in This Chapter?

This chapter contains the following topics:

Topic	Page
Compatability Rules	52
Transmitter Types	53
LED Status	54
Output mode: Monostable - Bistable - Stop/Start - Set/Reset	56
Changing outputs from Monostable to Bistable for XB•RFA02, XB5RMA04, ZBRRA, and ZBRRD	59
Changing Outputs From Monostable to Stop/Start for XB•RFA02, XB5RMA04, ZBRRA	61
How to Teach/Unteach Monostable, Bistable or Set/Reset Outputs for XB•RFA02, XB5RMA04, ZBRRA, ZBRRC, and ZBRRD	63
How to Teach Stop/Start Outputs for XB•RFA02, XB5RMA04, ZBRRA	65
Lock/Unlock for XB•RFA02, XB5RMA04, ZBRRA, ZBRRC, and ZBRRD	68

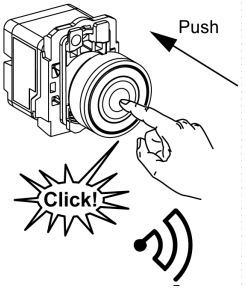
Compatability Rules

ZBRT2 transmitter is compatible with the following only:

- ZBRR• receivers with firmware version 2.0 and higher
- ZBRA1 relay antenna with firmware version 2.0 and higher
- ZBRN• access points with firmware version higher than 1.2

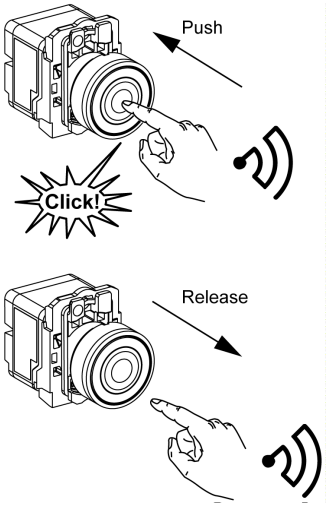
Transmitter Types

ZBRT1 and ZBRTP Transmitters



The radio message is sent when the button is pressed, signalled by a click. If the button is held down, the message is not transmitted continuously. The message is not sent when the button is released.

ZBRT2 Transmitter



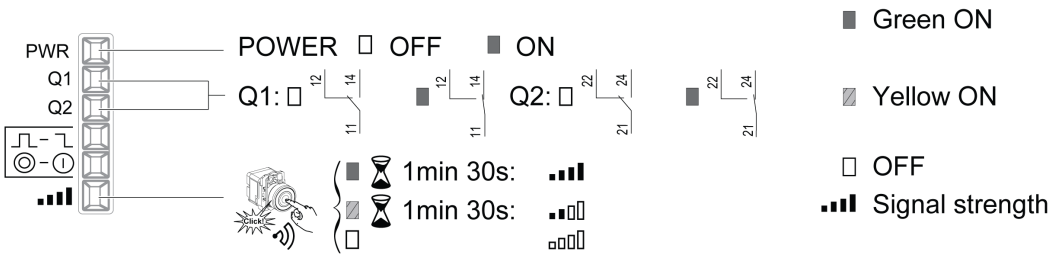
The radio message is sent when the button is pressed, signaled by a click. If the button is held down, the message is not transmitted continuously.

A second radio message is sent when the button is released. This message is not transmitted continuously. It is transmitted once, at the release of the pushbutton.

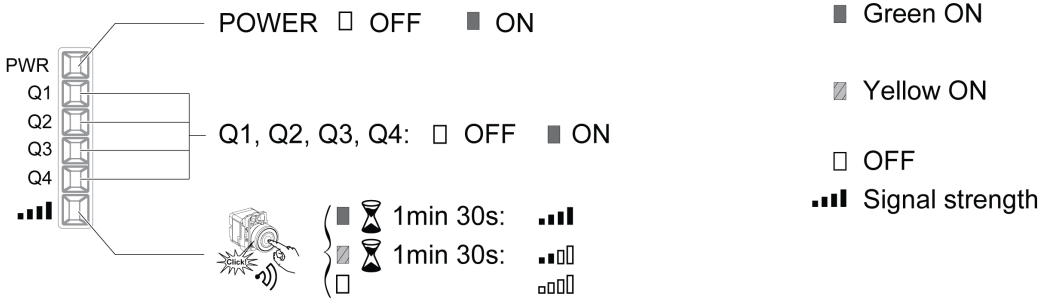
This transmitter is used only for the set/reset output mode.

LED Status

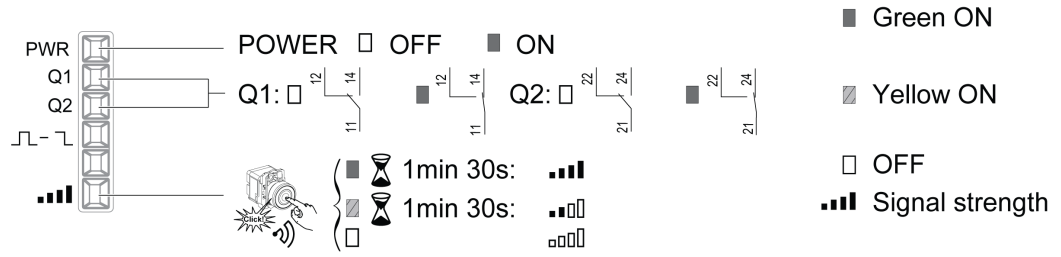
XB•RFA02 / XB5RMA04 and ZBRRA



ZBRRC

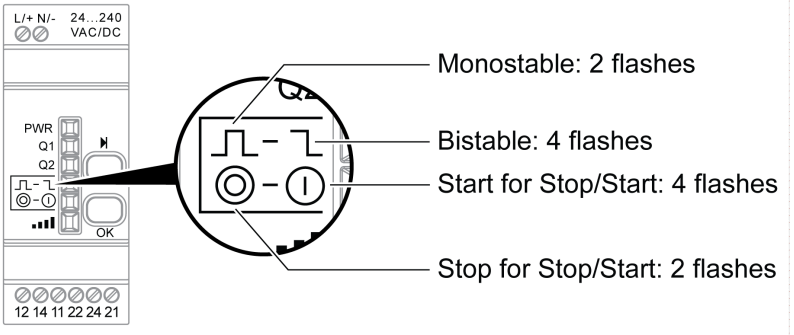


ZBRRD



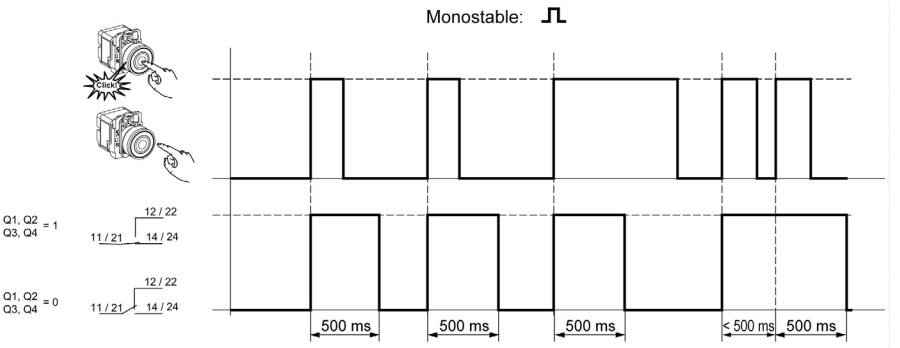
NOTE: The signal strength LED indicates the value of the last signal received. The time out for the LED is 1min 30s. This LED could also be switched off by pressing once the selection button of the receiver.

Synthesis

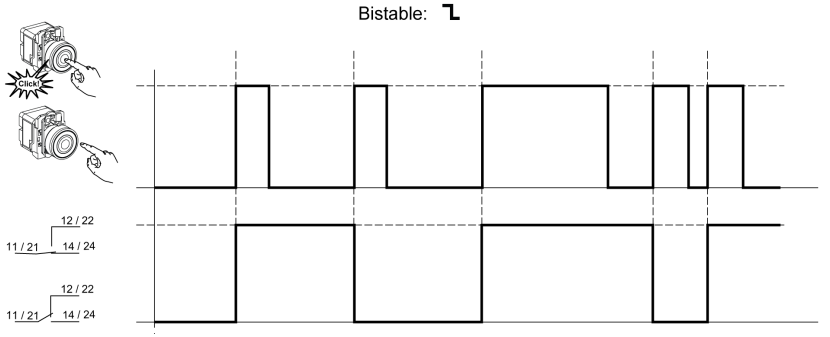

L/+ N/-
24...240
VAC/DC
PWR
Q1
Q2
OK
12 14 11 22 24 21
Monostable: 2 flashes
Bistable: 4 flashes
Start for Stop/Start: 4 flashes
Stop for Stop/Start: 2 flashes

Output mode: Monostable - Bistable - Stop/Start - Set/Reset

Monostable Output: Factory setting for packages and for ZBRRA, ZBRRC, and ZBRRD

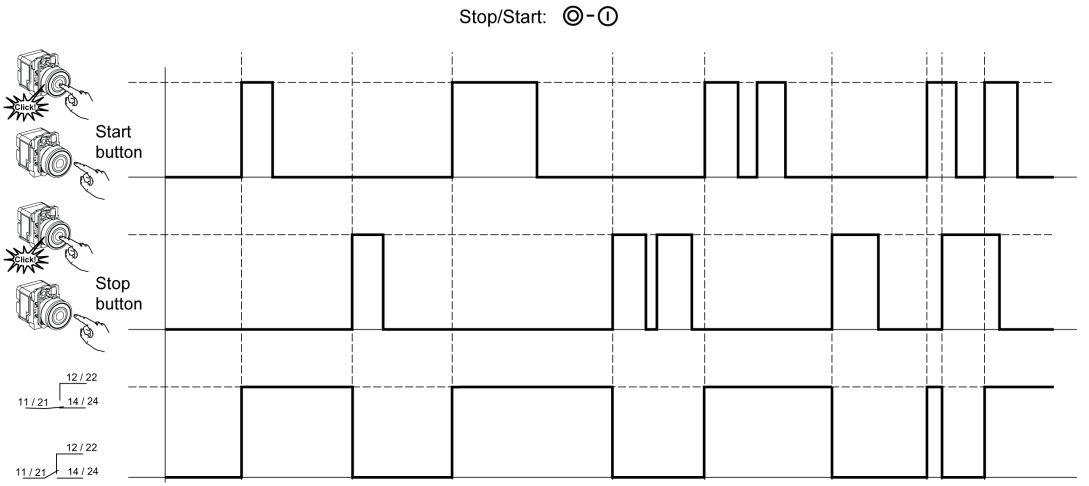


Bistable Output: Only for XB•RFA02, XB5RMA04, ZBRRA and ZBRRD



Stop/Start Output Standard Operation: Only for ZBRRA

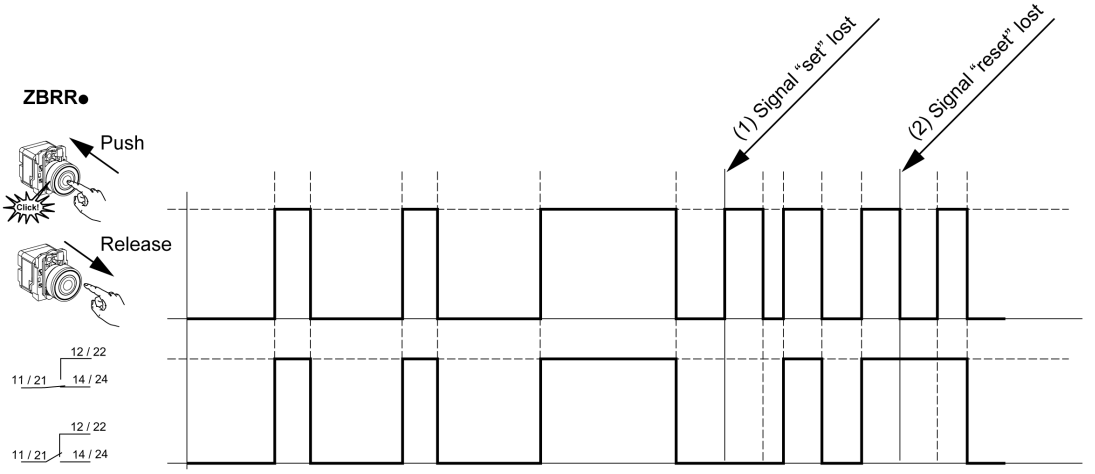
Description for situations where Stop button does not have priority over Start button:



NOTE: This function requires two transmitters.

Set/Reset Output: Only for ZBRRA, ZBRRC, and ZBRRD

This output mode is active only when the ZBRT2 transmitter is used.



NOTE:

1. Release and push again to resynchronise
2. Push and release again to resynchronise

Power outage and restore management

If the duration of a power outage is less than the power supply filtering time (approx. 7 ms), there will be no impact on the receiver, which continues normal operation. Power outages longer than the filtering time cause the product to restart when power is back. At restart the outputs will be in their initial states with LEDs off.

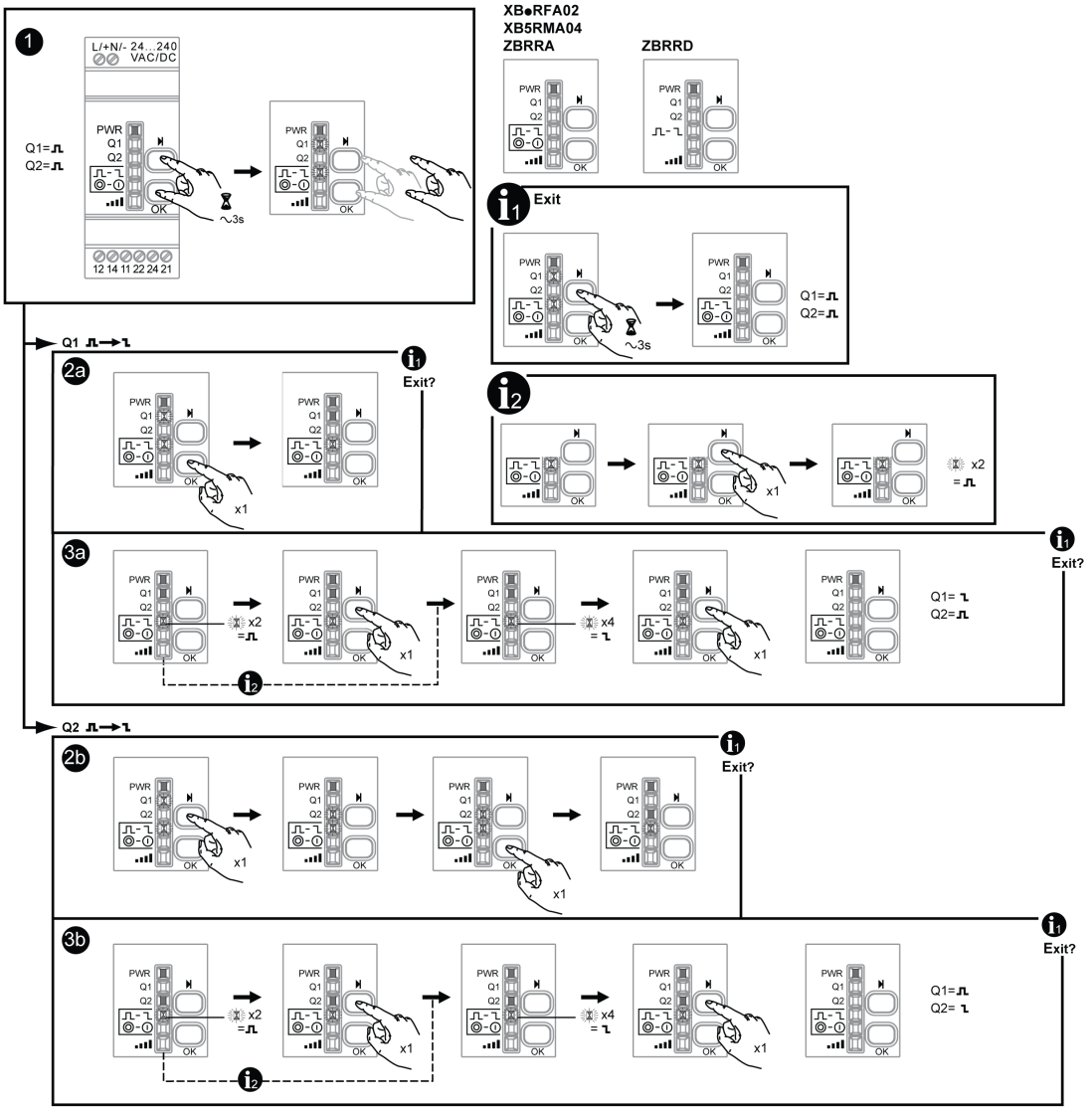
Changing outputs from Monostable to Bistable for XB•RFA02, XB5RMA04, ZBRRA, and ZBRRD

Procedure

This procedure shows how to change Q1 and Q2 outputs from monostable to bistable.

The icons shown have the following meanings:

LEDs	Meaning
	On
	Flashing
	Monostable
	Bistable


XB●RFA02
XB5RMA04
ZBRRA
ZBRRD
L/+N/- 24...240 VAC/DC
12 14 11 22 24 21
PWR
Q1
Q2
OK
Q1=
Q2=
~3s
Exit
Exit?
x1
x2
x4
Q1 →
Q2 →

Changing Outputs From Monostable to Stop/Start for XB•RFA02, XB5RMA04, ZBRRA

Procedure

This procedure shows how to change from monostable to Stop/Start for Q1 and Q2

The icons shown have the following meanings:

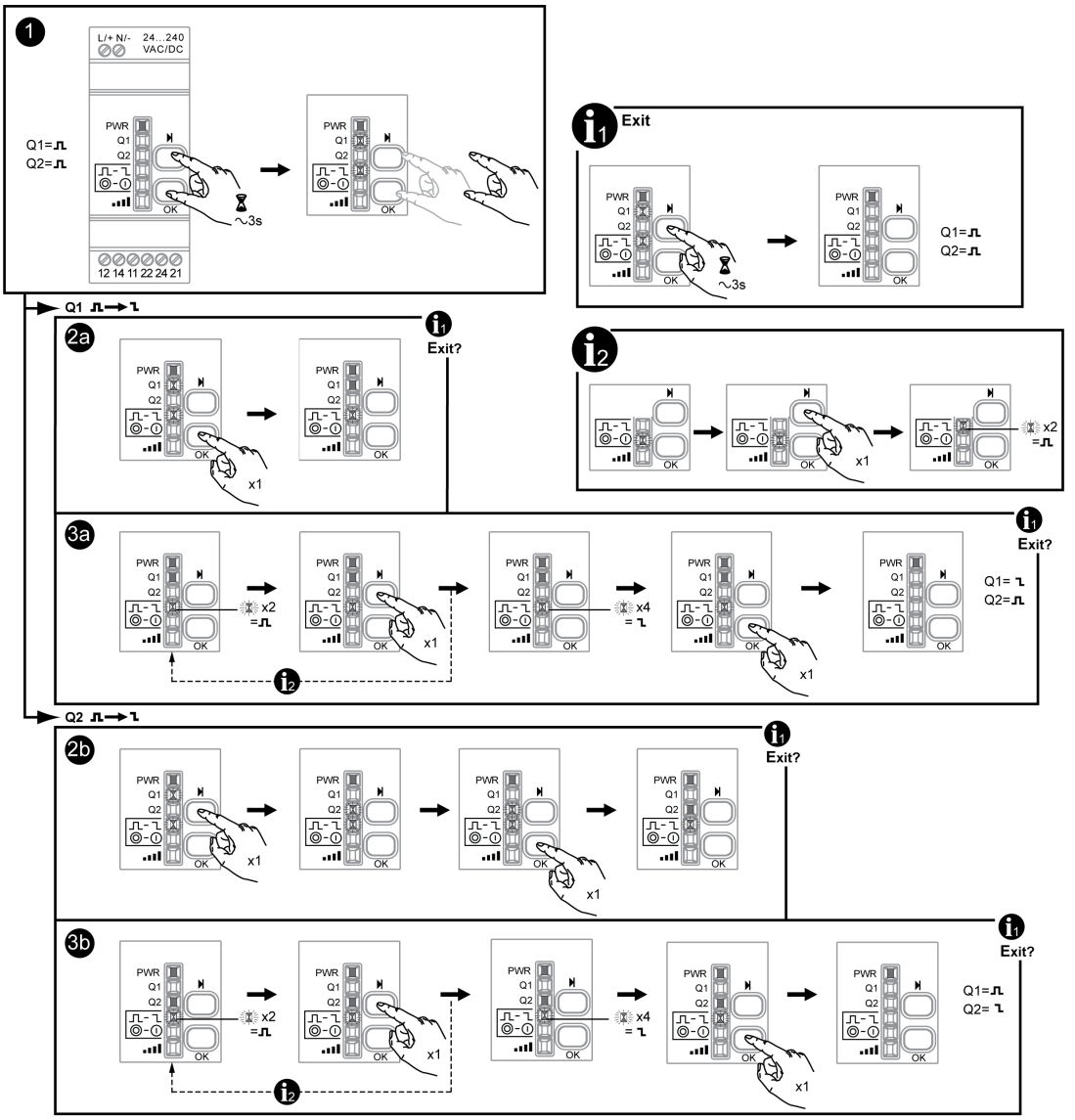
LEDs	Meaning
	On
	Flashing
	Monostable
	Stop/Start

NOTE: When changing the output from Monostable to Stop/Start, all the registered ID for this output will be automatically canceled from the receiver memory.

For information this also happens for the three following cases:

- From bistable to Stop/Start.
- From Stop/Start to monostable.
- From Stop/Start to bistable.

When changing the output from Monostable to Bistable, or Bistable to Monostable, the registered ID are not cancelled from the receiver memory.


1
L/+ N/- 24...240 VAC/DC
PWR
Q1
Q2
OK
~3s
12 14 11 22 24 21
Q1=
Q2=
i1 Exit
Q1=
Q2=
Q1
2a
Exit?
x1
i2
x2
=
3a
Exit?
Q1=
Q2=
x4
=
Q2
2b
Exit?
3b
Exit?
Q1=
Q2=

How to Teach/Unteach Monostable, Bistable or Set/Reset Outputs for XB•RFA02, XB5RMA04, ZBRRA, ZBRRC, and ZBRRD

Procedure

This procedure shows how to Teach/Unteach Q1 and Q2 outputs (ZBRRA) and Q1, Q2, Q3 and Q4 outputs (ZBRRC) when using monostable or bistable outputs.

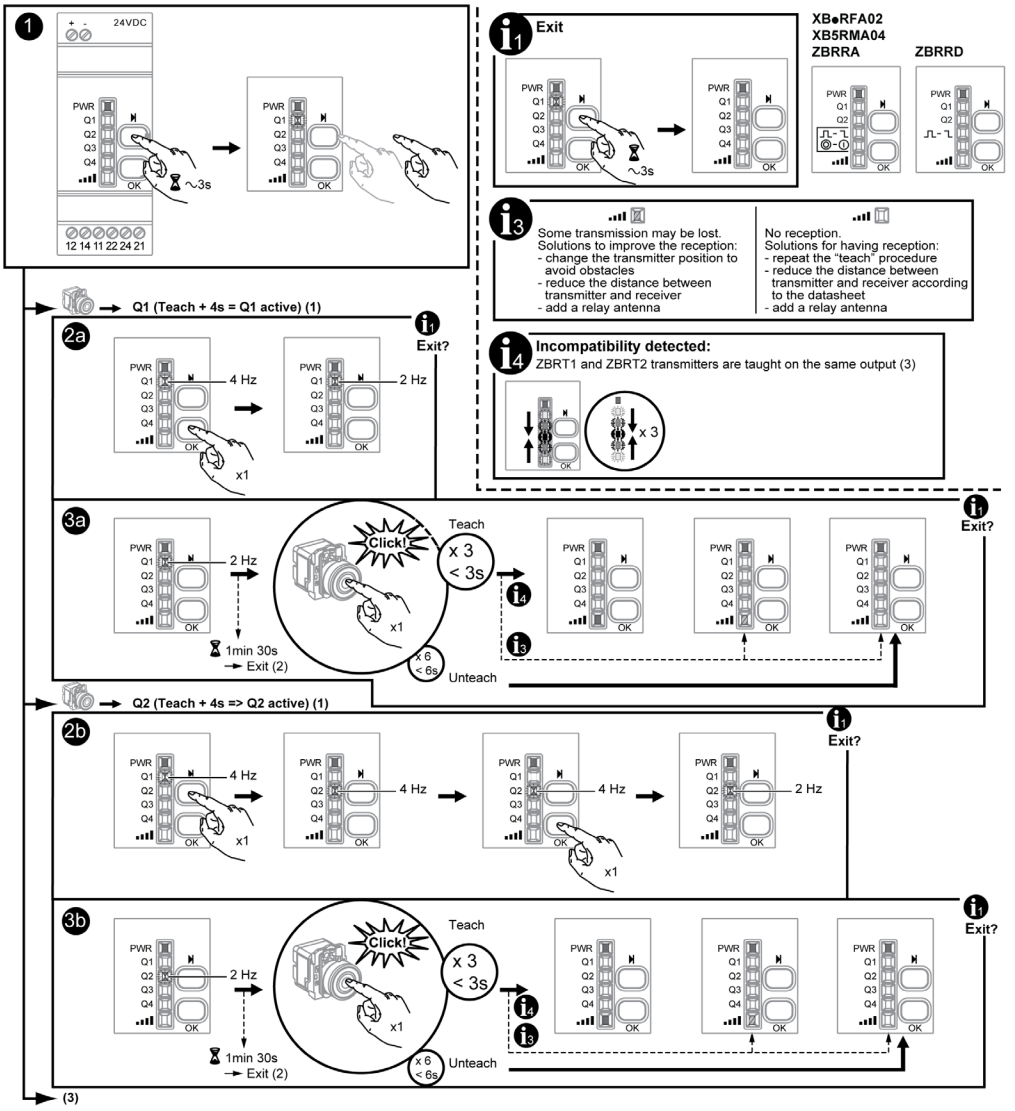
The icons shown have the following meanings:

LEDs	Meaning
	Green
	Yellow
	Flashing
	Monostable
	Bistable
	Stop/Start

NOTE: It is possible to store a maximum of 32 ID. For example, 32 ID on Q1 output and 0 ID on Q2 output, or 22 ID on Q1 output and 10 ID on Q2 output, can be stored on ZBRRA and ZBRRC.

When trying to teach a 33rd ID, all LEDs (except the power LED) flash quickly.

This 33rd ID is not taught.



1) The Q1, Q2, Q3 or Q4 outputs will be active only 4 s after the teaching procedure.
2) The teaching procedure must be performed within 1 min 30 s.
3) The teach procedure on Q3 and Q4 outputs is the same. The Q3 or the Q4 output must be selected and when the Q3 or Q4 LED is flashing at 2 Hz, the button can be taught.

How to Teach Stop/Start Outputs for XB•RFA02, XB5RMA04, ZBRRA

Preliminary information

By default, the relay option is monostable. Before proceeding, change the relay option to Stop/Start. Changing Outputs From Monostable to Stop/Start *(see page 61)* for more information.

Procedure

This procedure shows how to teach Q1 and Q2 outputs when using Stop/Start outputs.

The icons shown have the following meanings:

LEDs	Meaning
	Green
	Yellow
	Flashing
	Monostable
	Bistable
	Stop/Start

NOTE: It is possible to store a maximum of 32 ID. For example, 32 ID on Q1 output and 0 ID on Q2 output or 22 ID on Q1 output and 10 ID on Q2 output, can be stored on ZBRRA.

When trying to teach a 33rd, all LEDs (except the power LED) flash quickly.

This 33rd ID is not taught.

⚠ WARNING

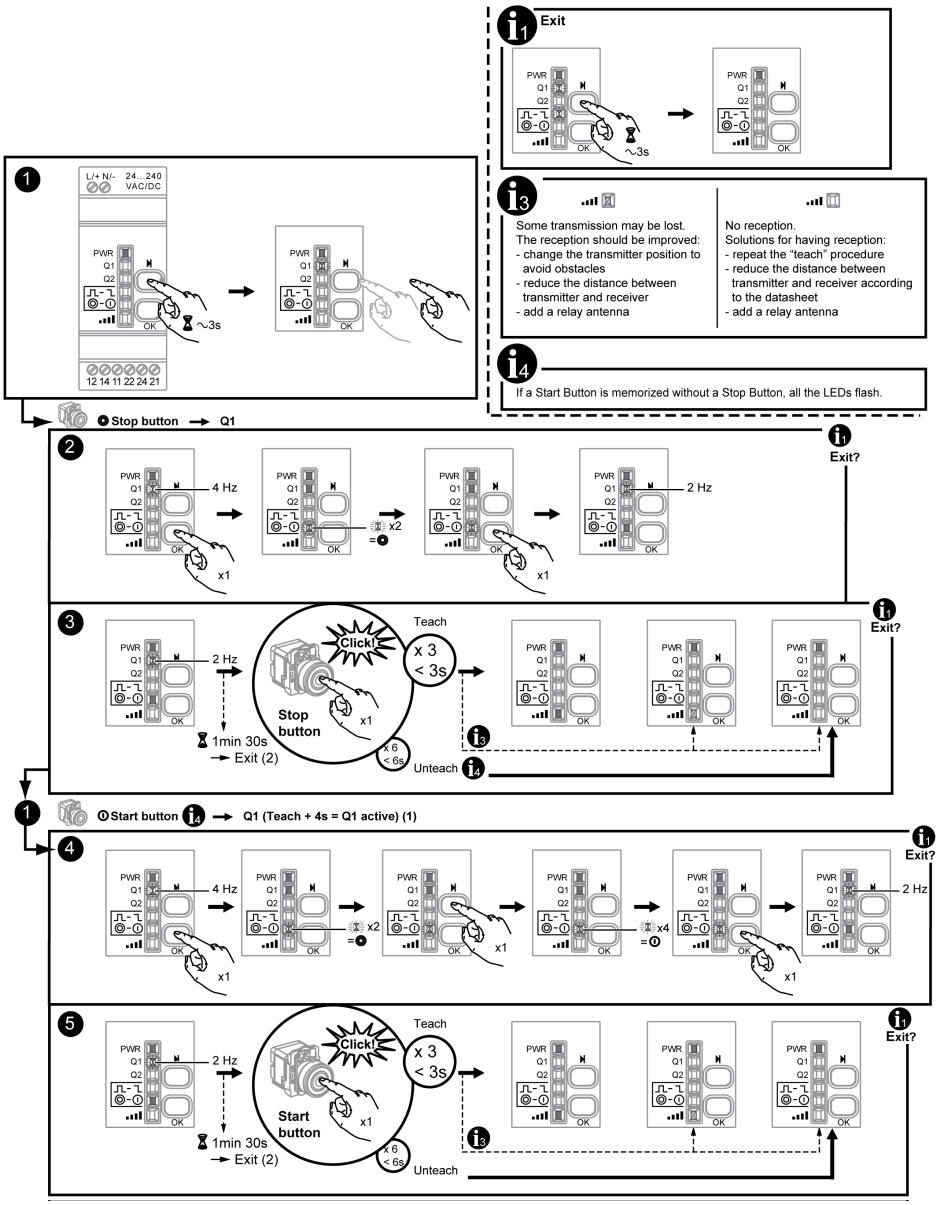
UNINTENTED EQUIPMENT OPERATION

Do not leave the receiver without taught Stop button.

Failure to follow these instructions can result in death, serious injury, or equipment damage.

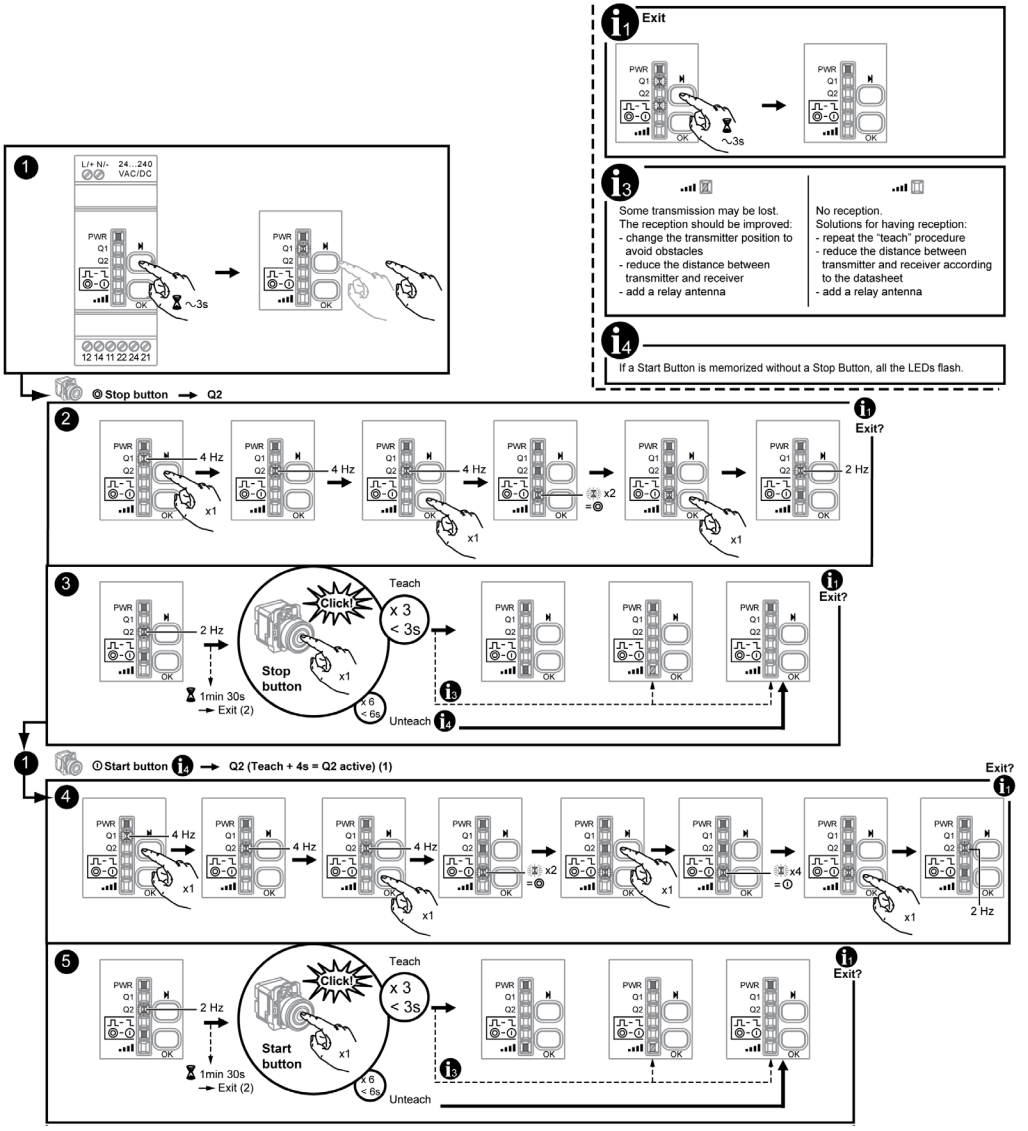
NOTE: For the teach procedure the Stop buttons must be taught before the Start ones. If you start by teaching a Start button (without any Stop button taught) all the LEDs flash. For the unteach procedure all the Start buttons must be untaught before the Stop ones.

How to Teach Q1 for Stop/Start


Exit
Some transmission may be lost.
The reception should be improved:
- change the transmitter position to avoid obstacles
- reduce the distance between transmitter and receiver
- add a relay antenna
No reception.
Solutions for having reception:
- repeat the "teach" procedure
- reduce the distance between transmitter and receiver according to the datasheet
- add a relay antenna
If a Start Button is memorized without a Stop Button, all the LEDs flash.
Stop button → Q1
Exit?
Teach
Click!
x 3 < 3s
Stop button
1min 30s → Exit (2)
x 6 < 6s
Unteach
Start button → Q1 (Teach + 4s = Q1 active) (1)
Start button
4 Hz
2 Hz
x1
x2
x4
~3s

1) The Q1 output will be active only 4s after the teaching procedure.
2) The teaching procedure must be performed within 1min 30s.

How to Teach Q2 for Stop/Start


Exit
Some transmission may be lost.
The reception should be improved:
- change the transmitter position to avoid obstacles
- reduce the distance between transmitter and receiver
- add a relay antenna
No reception.
Solutions for having reception:
- repeat the "teach" procedure
- reduce the distance between transmitter and receiver according to the datasheet
- add a relay antenna
If a Start Button is memorized without a Stop Button, all the LEDs flash.
Stop button → Q2
Exit?
Teach
x 3
< 3s
Click!
Stop button
1min 30s
Exit (2)
Unteach
Start button → Q2 (Teach + 4s = Q2 active) (1)
Start button

1) The Q2 output will be active only 4s after the teaching procedure.
2) The teaching procedure must be performed within 1min 30s.

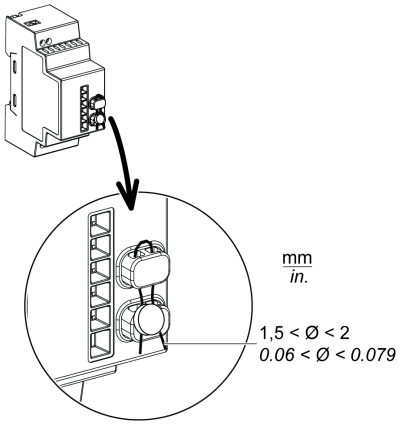
Lock/Unlock for XB•RFA02, XB5RMA04, ZBRRA, ZBRRC, and ZBRRD

Introduction

Lock enables to block the menus access by non authorized persons. The functioning of the receiver is not affected.

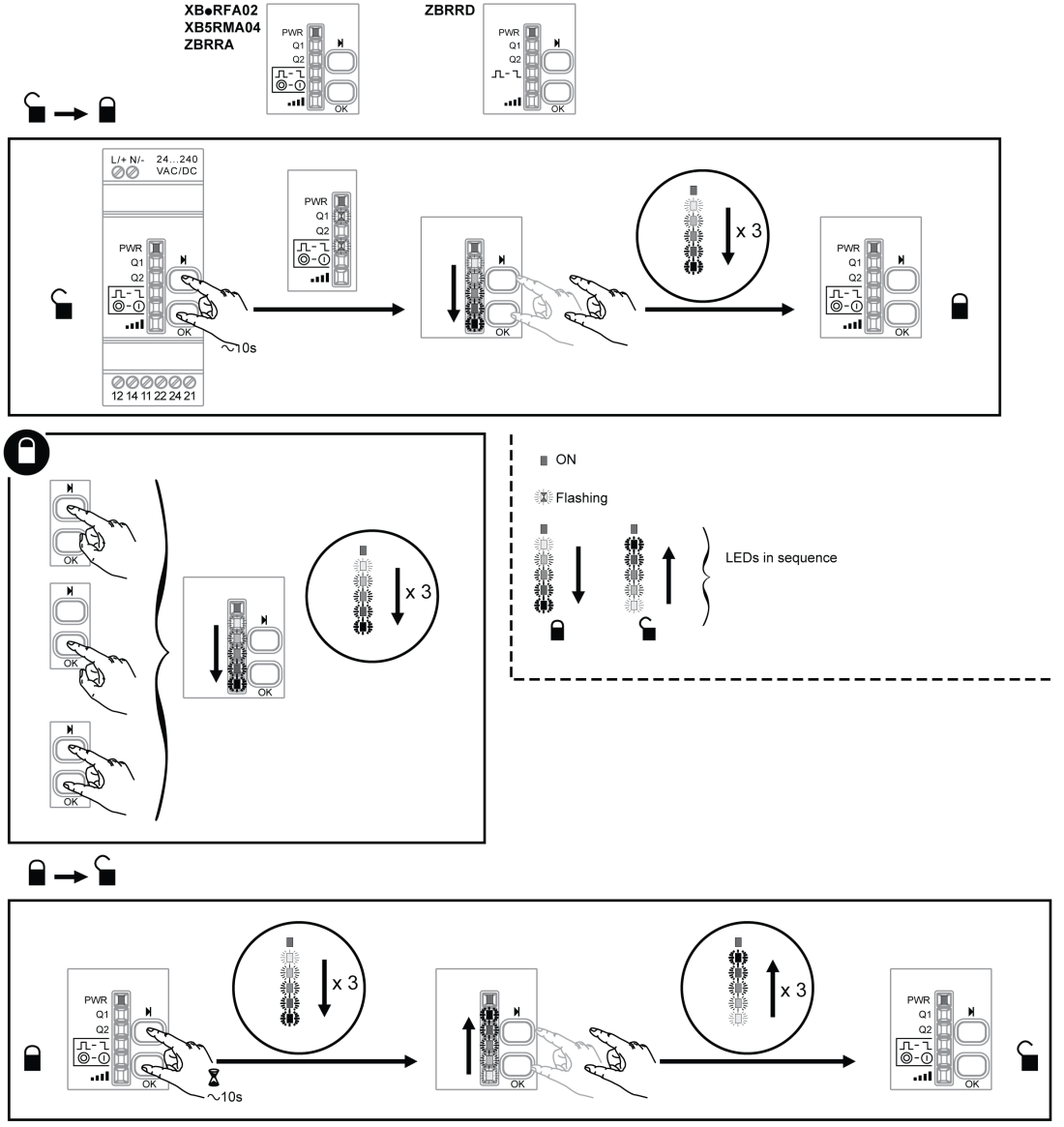
Mechanical Lock/Unlock

The following diagram shows how to perform buttons mechanical lock.



Electronic Lock/Unlock

This procedure shows how to electronically lock/unlock the receiver.



Chapter 4
Other Functions for Harmony XB5R

Other Functions Description

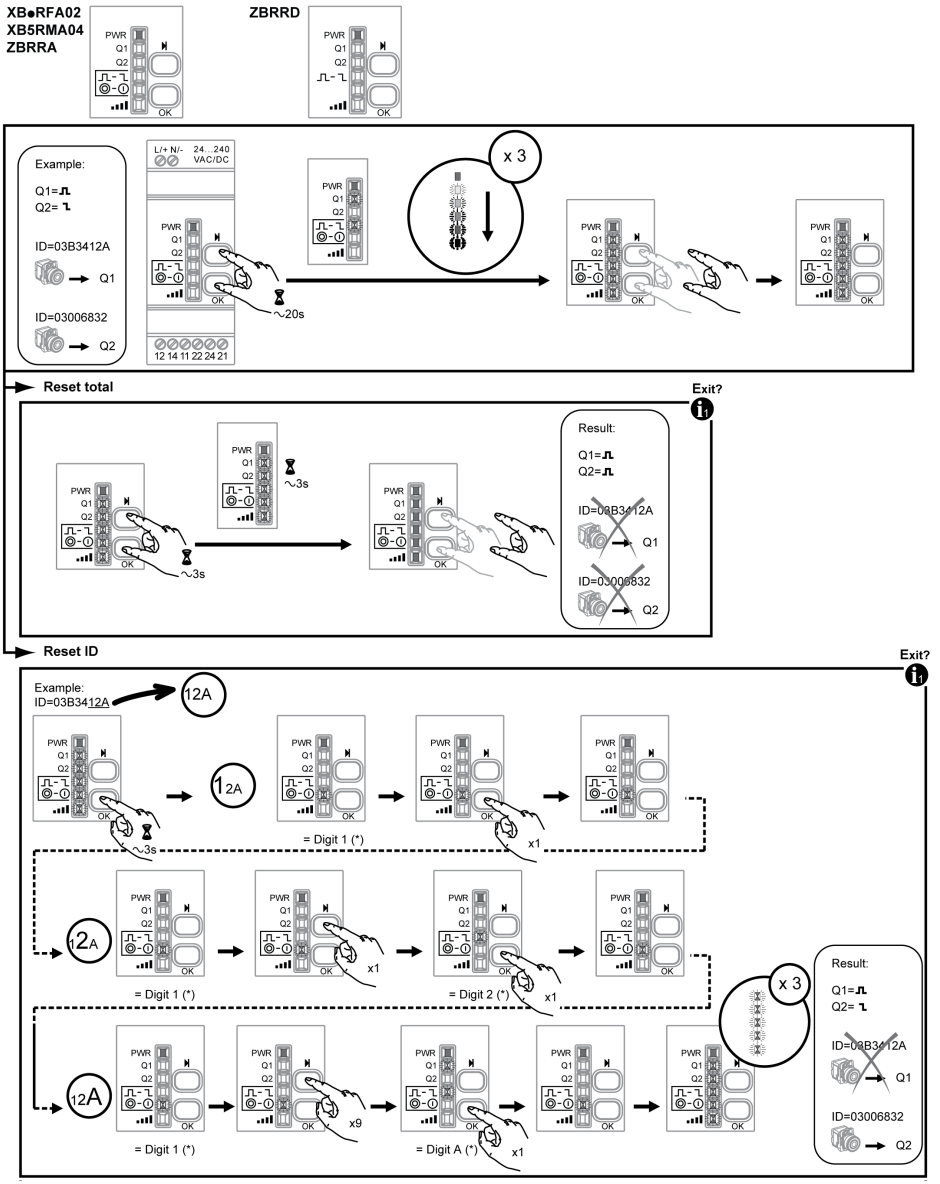
Total Reset and ID Reset procedure for XB•RFA02, XB5RMA04, ZBRRA, ZBRRC, and ZBRRD

Total Reset: After a Total Reset the receiver is on factory setting. All outputs are set to monostable function and all the registered ID are canceled.

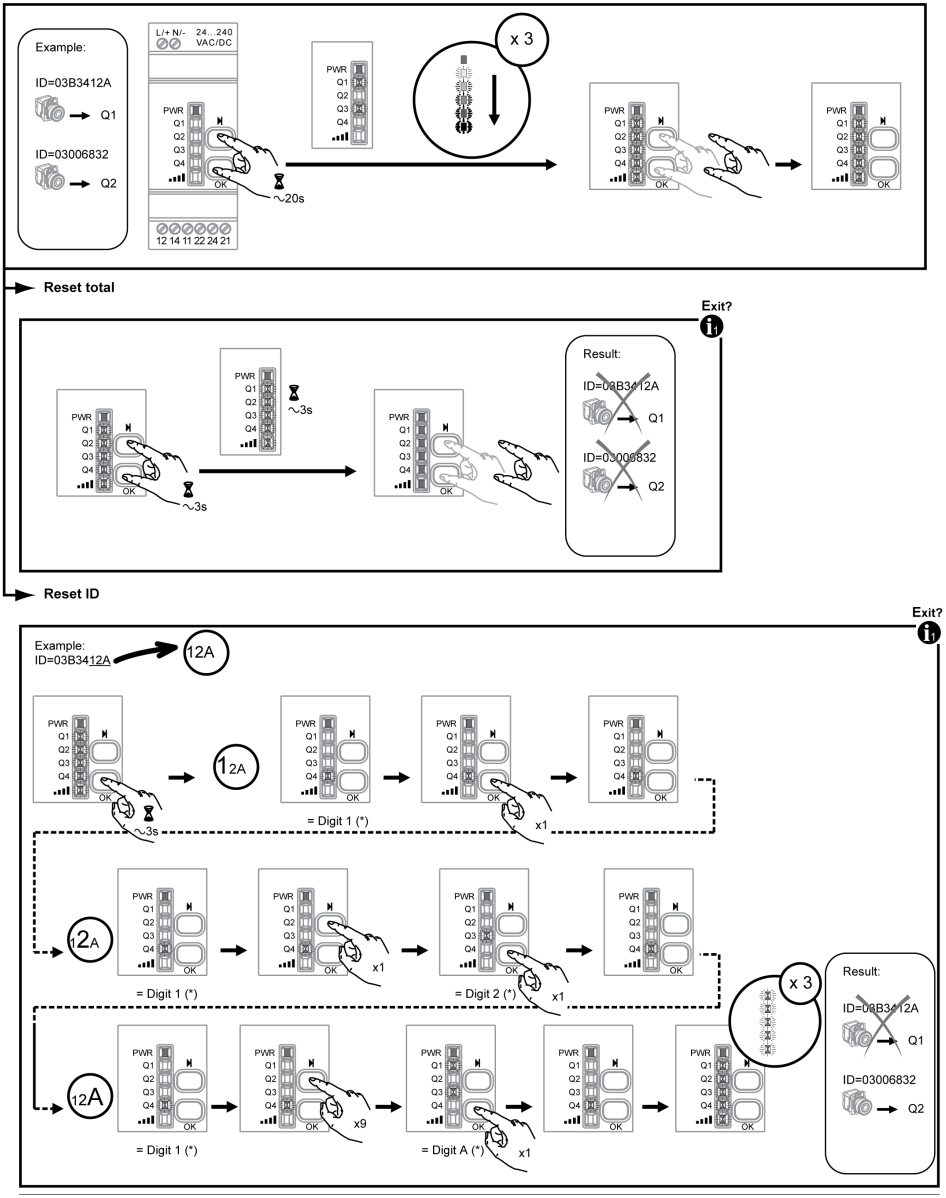
ID Reset: This function enables to cancel an ID without having the push button (e.g: lost push button). Only the transmitter ID is needed. The ID cancelation does not effect the output function.

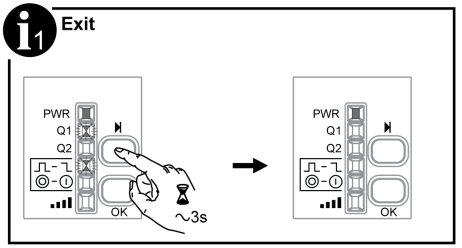
NOTE: To reset an ID, the last 3 digits are needed. The first, second and third digits must be entered as binary coded numbers in the receiver during the ID Reset procedure.

For ZBRRA and ZBRRD:

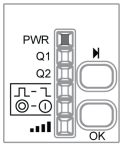


For ZBRRC:

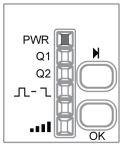

Example:
ID=03B3412A
Q1
ID=03006832
Q2
L/+ N/- 24...240 VAC/DC
PWR
Q1
Q2
Q3
Q4
OK
12 14 11 22 24 21
~20s
x 3
Reset total
Exit?
~3s
Result:
ID=03B3412A
Q1
ID=03006832
Q2
Reset ID
Example:
ID=03B3412A
12A
= Digit 1 (*)
x1
= Digit 2 (*)
x9
= Digit A (*)



XB●RFA02
XB5RMA04
ZBRRA



ZBRRD



ID Binary Coding

LED			(*): Digit ID														
ZBRRC	**ZBRRA**	**ZBRRD**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**A**	**B**	**C**	**D**	**E**	**F**	**0**
Q1 Q2 Q3 Q4	Q1 Q2 ⎍-⎣ ◎-①	Q1 Q2 ⎍-⎣																

Chapter 5
Harmony XB5R ATEX Products

Purpose

This chapter provides an overview of the Harmony XB5R ATEX products.

What Is in This Chapter?

This chapter contains the following sections:

Section	Topic	Page
5.1	Transmission Products	76
5.2	Reception Products	84
5.3	Functions	91

Section 5.1
Transmission Products

Overview

This section describes the ATEX transmitter products.

What Is in This Section?

This section contains the following topics:

Topic	Page
Presentation of ATEX Transmission Components	77
ID Registration	79
Assembly, Disassembly, and Mounting Instructions	81
XAWGR•••EX Mounting Instructions	82

Presentation of ATEX Transmission Components

ATEX Transmission Components

⚠ DANGER

HAZARD OF EXPLOSION

These devices must be installed, used, and maintained in accordance with:

- Standard EN60079-14 (Explosive atmospheres), part 14 (Electrical installations design, selection, and erection).
- Standard EN60079-17 (Explosive atmospheres), part 17 (Electrical installations design, selection, and erection).
- Standard NF C15 100 (Low voltage electrical installations) - European equivalent: IEC 6034.
- Regulations governing setup of the zone or zones for which the devices were designed.

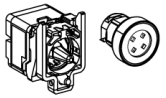
Failure to follow these instructions will result in death or serious injury.

⚠ WARNING

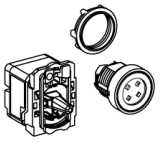
UNINTENDED EQUIPMENT OPERATION

- Do not use this equipment in safety critical machine functions.
- Use appropriate safety interlocks where personnel and/or equipment hazards exist.
- Do not disassemble, repair, or modify this equipment.
- Install and operate this equipment in an appropriately rated enclosure for its intended environment.
- Install properly rated fuses.
- Check that the control is inactive if the product falls during transit.

Failure to follow these instructions can result in death, serious injury, or equipment damage.



ZB4RTA0EX

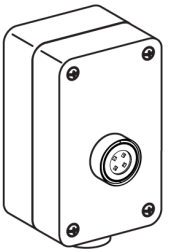


ZB5RTA0EX

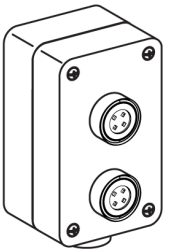
ZBRM01EX

ZBRM01BEX

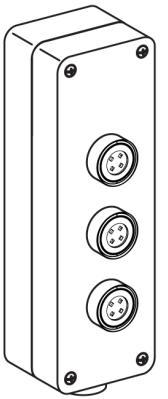
ZBRP1EX



XAWGR100EX



XAWGR200EX



XAWGR300EX

The following table describes the ATEX transmitter characteristics:

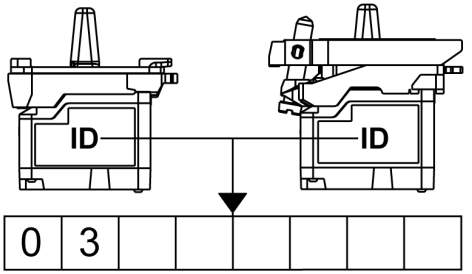
Designation	Type	Zone	Cap Color	Reference	Mass
Plastic handy box	–	Mining Ex ib I Mb Gas Ex ib I I B T6 Gb Dust ExibI I I CT85ºCDbIP65	–	ZBRM01BEX	0.100 kg (0.220 lb)
Transmitter	Metallic pushbutton	Mining Ex ib I Mb Gas Ex ib I I C T6 Gb Dust ExibI I I CT85ºCDbIP65	Without cap	ZB4RTA0EX	0.083 kg (0.183 lb)
	Plastic pushbutton		Without cap	ZB5RTA0EX	0.043 kg (0.095 lb)
Plastic handy box	–		–	ZBRM01EX	0.150 kg (0.331 lb)
Rope pull switch	–		–	ZBRP1EX	0.140 kg (0.309 lb)
Button box	XAW G 1-button box		–	XAWGR100EX	0.500 kg (1.102 lb)
	XAW G 2-button box		–	XAWGR200EX	0.550 kg (1.213 lb)
	XAW G 3-button box		–	XAWGR300EX	0.700 kg (1.543 lb)

NOTE: The operating characteristics are same as non-ATEX products.

ID Registration

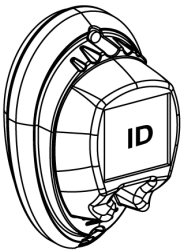
Transmitter: ID Registration

ZB●RTA0EX



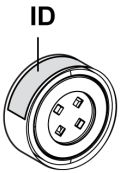
Transmitter: Handybox ID Registration

ZBRM01BEX



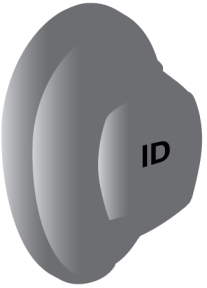
Transmitter: Pushbutton ID Registration

XAWGR●●●EX
ZB●RTA0EX



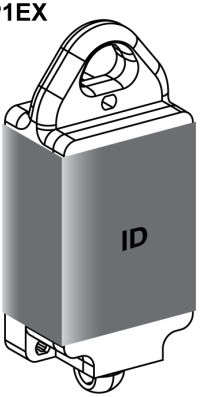
Transmitter: Handybox ID Registration

ZBRM01EX



Rope Pull Switch: ID Registration

ZBRP1EX



Assembly, Disassembly, and Mounting Instructions

ZB•RTA0EX and ZBRM01•EX Assembly

To install transmitter and pushbutton, refer to Transmitter and Pushbutton Assembly *(see page 28)*.

ZB•RTA0EX and ZBRM01•EX Disassembly

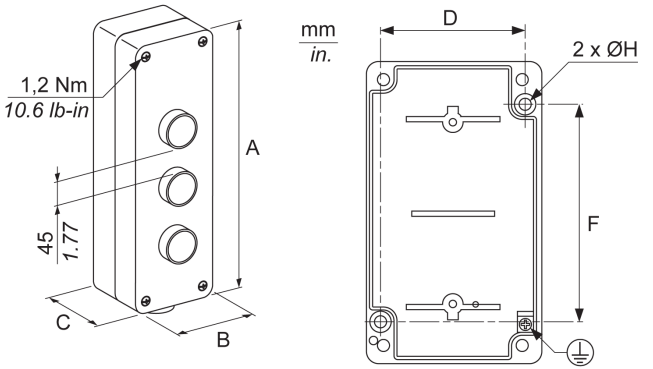
To disassemble, refer to Transmitter and Pushbutton Disassembly *(see page 33)*.

ZBRP1EX Mounting Instructions

To mount a rope pull switch, refer to Mounting Data for Rope Pull Switch *(see page 35)*.

XAWGR•••EX Mounting Instructions

Button Box Assembly



	A		B		C		D		F		H	
	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*	mm	*in*
XAWGR100EX	146	*5.75*	85	*3.35*	70	*2.76*	70	*2.76*	105	*4.13*	5,8	*0.23*
XAWGR200EX	146	*5.75*	85	*3.35*	70	*2.76*	70	*2.76*	105	*4.13*	5,8	*0.23*
XAWGR300EX	226	*8.90*	85	*3.35*	70	*2.76*	70	*2.76*	108	*4.25*	5,8	*0.23*

Models: ZBRT1, ZBRTP enclosed in ZBRP1

FCC USA and I C Canada Compliance Statement

This device complies with part 15 of the FCC rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

1) This device may not cause harmful interference.
2) This device must accept any interference received, including interference that may cause undesired operation of the device.

NOTE: Schneider Electric is not responsible for any radio or tv interference caused by unauthorized modifications to this equipment. Changes or modifications not expressly approved by Schneider Electric responsible for compliance could void the user's authority to operate the equipment.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1) L'appareil ne doit pas produire de brouillage.
2) L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Section 5.2
Reception Products

Overview

This section describes the ATEX reception products.

What Is in This Section?

This section contains the following topics:

Topic	Page
Presentation of ATEX Reception Components	85
ZBRA1DEX Mounting and Wiring Instructions	87
ZBRA1EX Mounting and Wiring Instructions	89

Presentation of ATEX Reception Components

ATEX Reception Components

⚠ DANGER

HAZARD OF EXPLOSION

These devices must be installed, used, and maintained in accordance with:

- Standard EN60079-14 (Explosive atmospheres), part 14 (Electrical installations design, selection, and erection).
- Standard EN60079-17 (Explosive atmospheres), part 17 (Electrical installations design, selection, and erection).
- Standard EN60079-31 (Explosive atmospheres), part 31 (Equipment dust ignition protection by enclosure ‘t’).
- Standard NF C15 100 (Low voltage electrical installations) - European equivalent: IEC 60364.
- Regulations governing setup of the zone or zones for which the devices were designed.

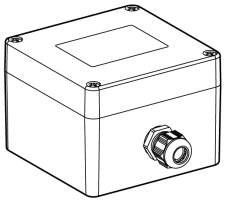
Failure to follow these instructions will result in death or serious injury.

⚠ WARNING

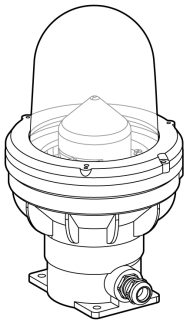
UNINTENDED EQUIPMENT OPERATION

- Do not use this equipment in safety critical machine functions.
- Use appropriate safety interlocks where personnel and/or equipment hazards exist.
- Install and operate this equipment in an approprately rated enclosure for its intended environment.

Failure to follow these instructions can result in death, serious injury, or equipment damage.



ZBRA1DEX



ZBRA1EX

The following table describes the ATEX receiver component characteristics:

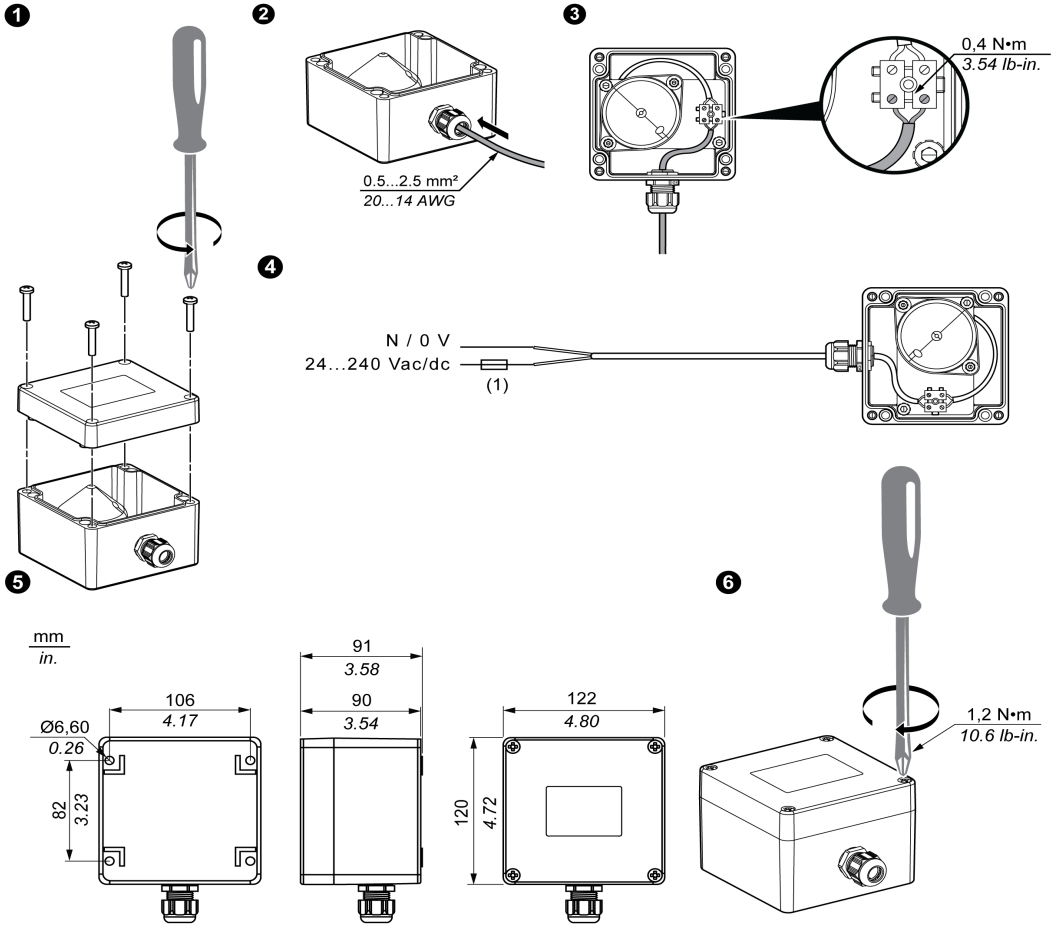
Designation	Zone	Reference	Mass
Relay antenna in plastic protection	Dust Ex tb I I I C T85º C Db IP65	ZBRA1DEX	1.000 kg (2.205 lb)
Relay antenna in glass protection	Gas Ex d I I C T6 Gb Dust Ex tb I I I C T85º C Db IP65	ZBRA1EX	3.100 kg (6.834 lb)

NOTE: The operating characteristics are same as non-ATEX products.

ZBRA1DEX Mounting and Wiring Instructions

Mounting and Wiring Instructions

ZBRA1DEX



NOTE: The cable gland must be tightened (Step 2 and 3).

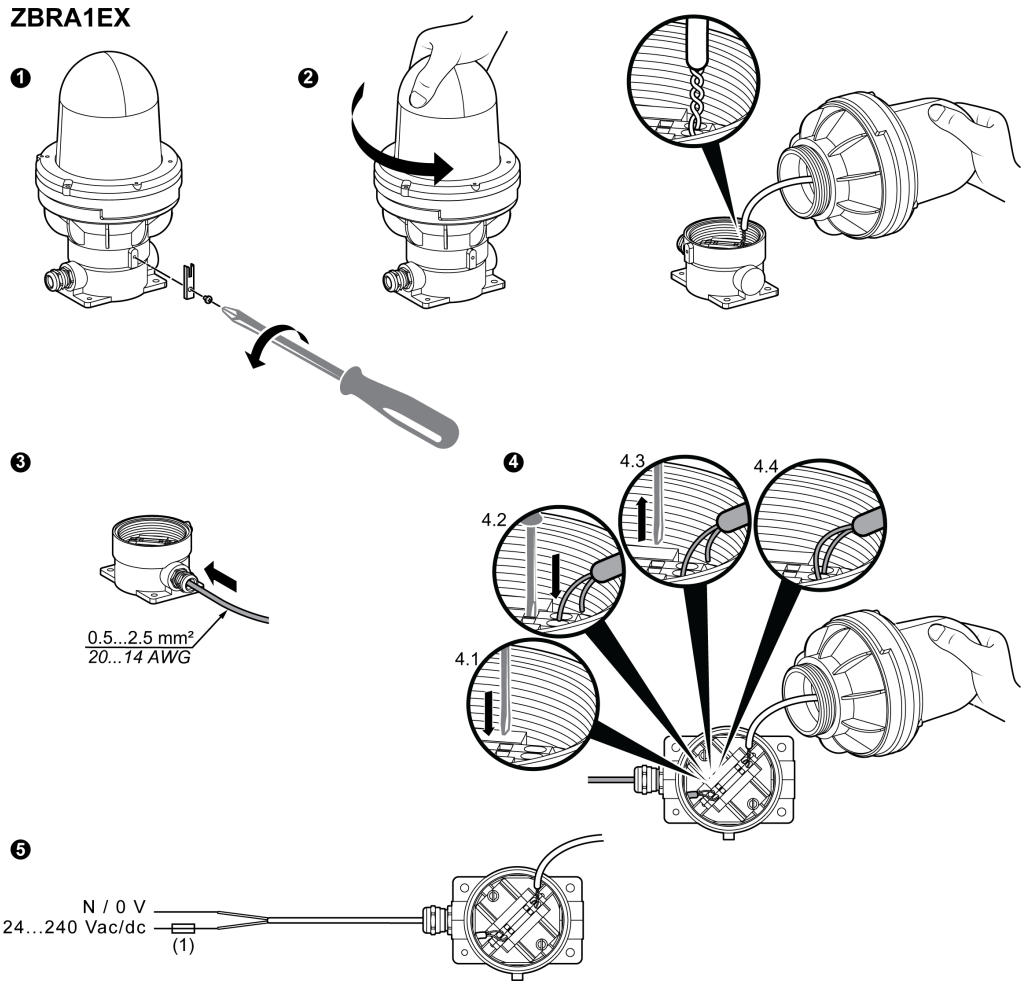
NOTE: Schneider Electric recommends to use adapters instead of the cable gland to change the shape of conduit entries if needed.

(1): 500 mA fuse from supplier Bussman® reference GMA-500 mA, 250 V 0.5 A fast-blow.

NOTE: The fuse must be installed outside the ATEX area or protected by Ex protection mode.

ZBRA1EX Mounting and Wiring Instructions

Mounting and Wiring Instructions



NOTE: The cable gland must be tightened (Step 2 and 3).

NOTE: Schneider Electric recommends to use sealing fittings (with resin component) instead of the cable gland to restrict the passage of gases, vapors, or flames from one portion of the electrical installation to another at atmospheric pressure and normal ambient temperatures.

NOTE: Schneider Electric recommends to use adapters instead of the cable gland to change the shape of conduit entries if needed.

(1): 500 mA fuse from supplier Bussman® reference GMA-500 mA, 250 V 0.5 A fast-blow.

NOTE: The fuse must be installed outside the ATEX area or protected by Ex protection mode.

Models: ZBRT1, ZBRTP enclosed in ZBRP1

FCC USA and I C Canada Compliance Statement

This device complies with part 15 of the FCC rules and Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:

1) This device may not cause harmful interference.
2) This device must accept any interference received, including interference that may cause undesired operation of the device.

NOTE: Schneider Electric is not responsible for any radio or tv interference caused by unauthorized modifications to this equipment. Changes or modifications not expressly approved by Schneider Electric responsible for compliance could void the user's authority to operate the equipment.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes:

1) L'appareil ne doit pas produire de brouillage.
2) L'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Section 5.3
Functions

Functions of ATEX Components

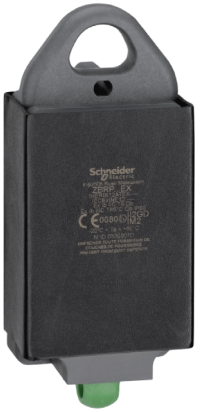
List of Components

The following table shows the ATEX components and the functionally equivalent non-ATEX components.

ATEX Reference		Non-ATEX Components
ZB5RTA0EX		ZBRT1
ZB4RTA0EX		ZBRT1
XAWGR100EX		ZBRT1

ATEX Reference		Non-ATEX Components
XAWGR200EX		ZBRT1
XAWGR300EX		ZBRT1
ZBRA1EX		ZBRA1

ATEX Reference		Non-ATEX Components
ZBRA1DEX		ZBRA1
ZBRM01EX		ZBRT1
ZBRM01BEX		ZBRT1

ATEX Reference		Non-ATEX Components
ZBRP1EX		ZBRT1